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Summary of the Third National Conference on Household Hazardous Waste Management Held on November 2-4, 1988 in Boston, Massachusetts

Tufts Univ., Medford, MA

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SUMMARY OF THE THIRD NATIONAL
CONFERENCE ON
HOUSEHOLD HAZARDOUS WASTE
MANAGEMENT

NOVEMBER 2-4, 1988

BOSTON, MASSACHUSETTS

Sponsored By:
U.S. Environmental Protection Agency

Conference Managed
by
Center for Environmental Management
Tufts University
and
American Public Works Association

Summary Prepared by:
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February 1989

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THE CENTER FOR ENVIRONMENTAL MANAGEMENT

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TABLE OF CONTENTS

PAGE

OPENING PLENARY SESSION - November 2, 1988

Opening Remarks
Michael Deland 1
EPA Perspective on Household Hazardous Waste Management
Sylvia Lowrance 2
History of Household Hazardous Waste Management
Dana Duxbury..5
European Household Hazardous Waste Management Activities
Gerhard Vogel 7
Canadian Household Hazardous Waste Management Activities
William Armstrong 10
The Chemical Specialties Manufacturers Association's Views on Household Hazardous Waste Management
Robert Etter 13
The National Paint & Coatings Association's Response to Household Hazardous Waste Management
Robert Foreman 15

CONCURRENT SESSIONS - November 3, 1988

A. How to Run a Collection Program 17
What is HHW?
Allen Maples 17
Actual and Potential Problems
David Galvin 22
Management Options
Non-Collection
Gina Purin 23
Alternatives
Kate Gage 24

B. 1988 Special HHWM Programs 28
King County, WA
Richard Conlin 28
Industry Sponsored
James Conner 29
Presidential Award-Winning
Suzan Craik 30

con't from iii

C. Batteries 32
- What's the Problem?
  - Allen Hershkowitz 32
- Collection Options
  - Marie Steinwachs 33
- Management Options
  - Auto Lead-Acid
    - Robert Steinwurtzel 35
  - Dry Cell
    - Ray Balfour 38
    - Harry Fatkin 40

D. Reduction and Other Management Options 41
- Alternatives
  - Kathy Betzhold 41
- Recycling
  - Cass Goldwater 44
- European Programs
  - Gerhard Vogel 44
- Waste Exchanges and Hotlines
  - Ned Brooks 45

E. How To Run a Collection Program 49
- Collection Programs
  - Planning
    - Leslie Lewis 49
  - Education
    - Joan Dotson 50
    - Steve Drew 51
  - Education Materials Display
    - Ginger Lawrence 52

F. Funding 54
- State Sponsored, FL
  - Jan Kleman 54
- State Permit Fee, IA
  - Stuart Schmitz 55
- Multiple Local Government Agencies, Seattle, WA
  - Richard Conlin 55
- Industry Funding, Midland, MI
  - James Conner 56
- Solid Waste Tipping Fee, San Francisco, CA
  - Joseph Johnson 57

G. Permanent Programs 63
- Overview of Permanent Collections
  - Diane Christensen 63
- Case Studies
  - San Francisco - Tom Watkins 64
  - Martha's Vineyard - Kate Gage 66
  - Michigan's Programs - Bob Ceru 67
  - Anchorage's Program - Glenn Akins 68

con't on pg v

con't from pg iV

Permanent Education Program
    Mary Catherwood 69

H. Program Management 71
  Total Integrated HHWM Program
    David Galvin 71
  Local Planning
    California
      Judy Orttung 73
    Washington State
      Bill Green 73
  Comprehensive Programs
    Babylon, Long Island
      Evan Liblit 77
    Minnesota
      Susan Ridgley 79

I. How to Run a Collection Program 83
  Funding and Costs
    Dana Duxbury 83
  Health and Safety
    Larry Sweetser 85
  Demonstration of Bulk vs. Lab Packing
    LeeAnn Merashoff 91
  Site Selection
    Michael Borden 92

J. Pesticides - Farm and Home 94
  Overview of Pesticide Issues
    Gina Purin 94
  FIFRA
    Robert Denny 94
  Collections - Farm and Home
    Susan Ridgley 96
  Other Management Options
    Jay Feldman 97

K. Components of an HHWM Education Program 99
  Integrated Program
    Sondra Goodman 99
  Collection Programs
    Joan Dotson 100
  Industry Program
    Elizabeth Garside 101
  HHWM in West Germany
    Joyce Rosenthal 102

con't pg vi

Cm't pg v

L. Scientific Information 104
    Data
        Linda Morse 104
    Solid Waste Composition
        Douglas Wilson 109
    Landfills
        Robert Landreth 119
    Resource Recovery
        David Sussman 120
    Water
        David Galvin 121

M. How to Run a Collection Program 126
    Liability
        James Dougherty 126
    RFPs and Contracts
        LeeAnn Merashoff 126
    Special Waste Collection Programs
        Susan Ridgley 127

N. Used Oil 129
    The EPA Program
        Susan O'Keefe 129
    State and Local Collection Programs
        Rob Arner 130
    BFI's Curbside Collection Programs
        Lynn Ingraham 132
    Management Options
        Reclaiming
            John Nolan 133
        Re-refining
            George Booth 135

O. Paint 136
    Overview of Types of Paints
        Ronald Child 136
    Industry's Response
        Robert Foreman 138
    Management Options
        Diane Christensen 138
    Latex Paint Recycling
        Richard Conlin 140

Cm't pg vii

con't from. pg ii

P. Legislative 141
Overview of Current Laws, Rules, Regulations
Leslie Lewis 141
Need for Additional Laws
Industry Perspective
Donald Lofty 142
Government Perspective
State Rep. Barbara Gardner 147
Environmental Perspective
Margie Alt 148

CLOSING PLENARY SESSION - November 4, 1988

Congressional Concerns
Congressman Chester Atkins 150
Collection Program Liability
James Dougherty 151
Contracts and RFPs
Elizabeth McCormick 152
Panel on Future Trends in HHWM
David Allen 153
Dana Duxbury 154
T.K. Smith 156
Howard Levenson 157
Bruce Weddle 158

LIST OF FIGURES

PAGE

Figure 1 - Composition of HHW in Marin County, CA, and New Orleans, LA 19
Source: U.S. EPA

Figure 2 - Alternatives 26
Source: Gage, Martha's Vineyard Refuse Disposal District

Figure 3 - Decline in the Use of Mercury in U.S. Consumer Battery Production...................39
Source: Balfour, Rayovac Corporation

Figure 4 - Alternatives to Commonly Used Hazardous Household Products 42
Source: Betzhold, The League of Women Voters of Albany County, NY

Figure 5 - Disposal Advice for HHW Calls: 7/1/87 - 6/30/88...............................46
Source: Brooks, Minnesota Pollution Control Agency

Figure 5A - Reducing Disposal Costs Per Participant........48
Source: Brooks, Minnesota Pollution Control Agency

Figure 6 - HHWCF Weekly Participant Data 58
Source: Johnson, City and County of San Francisco

Figure 6A - Distribution of Waste by Category 59
Source: Johnson, City and County of San Francisco

Figure 6B - Total Expenses for the First Six Months of Operation 60
Source: Johnson, City and County of San Francisco

Figure 6C - Disposal Costs Per Gallon, Per Participant and Per Household 62
Source: Johnson, City and County of San Francisco

Figure 7 - Plan Alternative A 75
Source: Green, Washington State Department of Ecology

Figure 8 - Calculation of Annual Household Hazardous Waste Generation 105
Source: Morse; Brown, Vence & Associates

Figure 8A - Calculation of Per-Household Generation of Hazardous Wastes 106
Source: Morse; Brown, Vence & Associates

Figure 8B - Phone Survey Data - Disposal Methods Used for Household Hazardous Wastes 107
Source: Morse; Brown, Vence & Associates

Figure 8C - Generated Waste Stream Versus Collection Program Wastes: Major Waste Types....108
Source: Morse; Brown, Vence & Associates

Figure 9 - Garbage Project HHW Studies....110
Source: Wilson, University of Arizona

Figure 9A - Household Hazardous Waste Estimates Based on U.S. Sample 111
Source: Wilson, University of Arizona

Figure 9B - Detailed Composition Data For Household Cleaners 112
Source: Wilson, University of Arizona

Figure 9C - Detailed Composition Data For Automotive and Household Maintenance Items 113
Source: Wilson, University of Arizona

Figure 9D - Detailed Composition Data For Yards, Batteries, Drugs, Cosmetics, and Other Items 114
Source: Wilson, University of Arizona

Figure 9E - HHW Percentages 115
Source: Wilson, University of Arizona

Figure 9F - Major Waste Types 116
Source: Wilson, University of Arizona

Figure 9G - HHW in Four U.S. Communities....117
Source: Wilson, University of Arizona

Figure 9H - Income and Pesticide Wastes....118
Source: Wilson, University of Arizona

Figure 10 - Heavy Metals in Domestic Wastewater....122
Source: Galvin, Seattle Water Pollution Control Department

Figure 10A - Heavy Metal Contributions From Household Products likely to enter Domestic Wastewater 123
Source: Galvin, Seattle Water Pollution Control Department

Figure 10B - Organic Chemicals in Domestic Wastewater 124
Source: Galvin, Seattle Water Pollution Control Department

Figure 11 - Average Costs....................................139
Source: Christensen, County of San Bernardino, CA

Figure 12 - State Level Household Hazardous Waste Laws and Regulations 143
Source: Dana Duxbury & Associates

LIST OF APPENDICES

Appendix I -- Final Program

Appendix II -- Final List of Speakers

Appendix III -- Speakers' Biographical Sketches

Appendix IV -- Clarification of Issues Pertaining to Household Hazardous Waste Collection Programs

Appendix V -- The National Listing of Household Hazardous Waste Collection Programs

Appendix VI -- National Household Hazardous Waste Collection Program Survey

Appendix VII -- Bibliography on Household Hazardous Wastes

Appendix VIII -- List of Attendees

Appendix IX -- HHW State Contacts

Appendix X -- Sources of Information on Canadian HHW Activities

Appendix XI -- Collection Program Contractors

Appendix XII -- National HHW Collection Program Experts List

Appendix XIII -- Permanent HHW Collection Programs Operating in 1988

Appendix XIV -- Information for Ordering Conference Summaries

Appendix XV -- Information for Ordering Conference Audio Tapes

Appendix XVI -- State Level HHW Laws and Regulations: Definition of Column Headings

CONFERENCE ON HOUSEHOLD HAZARDOUS WASTE MANAGEMENT

OPENING PLENARY SESSION

The third National Conference on Household Hazardous Waste Management (HHWM) was convened in plenary session on Wednesday, November 2, 1988, at the Westin Hotel, Copley Place, Boston, Massachusetts. The moderator of the opening session was Michael Deland, Regional Administrator, U.S. EPA Region I.

OPENING REMARKS

Deland opened the conference and pointed to the increasing awareness of the public in regard to the problems caused by improper disposal of waste. While expressing optimism that the Superfund problem will be solved, albeit with a lot of time and money spent, he was less optimistic about what can be done about the proliferation of waste. With 300 million metric tons of hazardous waste generated each year and one ton per person per year of solid waste, Deland stated that the difference between industrial and household contamination is simply a matter of quantity and degree. In order to deal with the problems facing this country major societal and lifestyle changes will have to be made, not by industry alone, but by individuals as well. The key to change being education, he commended conference organizer Dana Duxbury for bringing together representatives from all sectors involved with the issue and urged participants to spend a lively and productive three days working on solutions to meet the challenge.

KEYNOTE ADDRESS:
EPA PERSPECTIVE ON HHW MANAGEMENT

Sylvia Lowrance, Director, Office of Solid Waste, U.S. EPA.

Lowrance began by pointing out that EPA's sponsorship of the conference is an indication of the importance the agency gives to household hazardous waste (HHW) programs. It is one of the most significant components of the comprehensive national waste management system. One purpose of the conference is to provide communities which have never held collection programs or those looking to improve their programs with useful and practical information. The second purpose is to discuss, both formally and informally, the issues facing those concerned about HHW and the impediments to doing the job and doing it well. Lowrance expressed her satisfaction at the broad range of speakers assembled to address the conference and added that the timing was particularly appropriate in view of the renewed interest in municipal solid waste.

Her address dealt with her assessment of where HHW collections fit into the overall national waste program that is to be implemented and with the future of HHW programs. HHW is exempt from hazardous waste regulations. Until about a year ago the effort at the national level had been to deal with the problems of managing hazardous waste. Illegal dumping, as well as disposal practices which were once regarded as proper, proved to be the cause of problems dealt with by the 1980 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Superfund legislation. One aspect of the effort was to abate problems that already existed and the second was to implement a strong program of prevention of future problems. Those two goals are equally applicable to solid waste as well as hazardous waste. Without these two components there will be an endless cycle of problems, and the costs of clean-ups will grow. With high clean-up costs a prevention strategy is essential.

The policy articulated by EPA over the past year and a half has been to eliminate the generation of waste wherever it can be done. This is part of the municipal solid waste agenda for action and the hazardous waste minimization policy. Also, wastes which must be produced have to be carefully managed. The document outlining the municipal waste strategy is out in draft and Lowrance encouraged conference participants to comment on this document.

Source reduction, which gets at the volume of waste through better packaging, is one area of attention. Reduction of toxics is another. EPA is considering banning the use of certain toxics where substitutes are available. EPA set a goal of 25 percent recycling of the nation's solid waste stream by the year 1992. The Federal government has a unique role in educating the public, providing citizens with information and also assisting in technology transfer.

In the HHW area, EPA endorses two methods for preventing future problems. One is to provide consumer education to promote the proper use of products and proper disposal of HHW. The second is to provide ongoing aggressive support of HHW collection programs.

There are 160 million tons of garbage generated each year, and landfill capacity is running out. Public concern over the risks to our health and to the environment is increasing. Even if the toxic percentage of the 160 million tons of garbage is small, it must still be properly managed. Therefore, HHW collection is an important component of comprehensive approaches to municipal solid waste management.

Addressing the roles that various parties can play, Lowrance observed that it is at the state and especially at the local level that collection programs must be initiated and developed. The EPA's role is to give technical assistance to state and local entities to solve issues which may be impediments to running programs. From conference participants (and others) EPA needs to know what are the priority needs.

Certain concerns have repeatedly been raised to EPA: the legal status of HHW; liability under the 1976 Resource Conservation and Recovery Act (RCRA) and CERCLA; and dioxin disposal. The EPA Policy Statement issued November 1, 1988 covers these issues (See Appendix IV). Lowrance highlighted a few key points.

Legal status: HHW is exempt under RCRA, no matter how large the quantity. Lowrance added two caveats. The first is that under the Mixtures Rule, HHW mixed with small quantity generator (SQG) hazardous waste is subject to regulation as a hazardous waste under RCRA Subtitle C rules. The second warning is that although HHW may be exempt under RCRA Subtitle C, it may not be exempt from more stringent state regulations.

Liability: CERCLA liability is a potential threat. CERCLA liability ensues no matter where the hazardous waste is found and therefore it is always worthwhile to handle wastes properly.

Dioxins: in household products it is not a listed waste, under federal rules. As a practical matter it is very difficult to dispose of. EPA and the waste management industry are working together to expand the management capacity for dioxin-containing wastes and to convince local citizens that it is possible to do this safely.

General Comments:

RCRA reauthorization will be on the Congressional agenda in the next year. Federal legislation is likely to include a comprehensive waste management scheme that marks a change from the situation up to now where hazardous waste has been the main focus. All categories of solid waste will be covered. There is renewed interest in having the government pursue a more activist role.

Other topics of debate will be mandatory waste minimization, national goals for the recycling of solid waste, possible product charges for packaging, and other issues. Lowrance urged everyone to join the debate in order that a workable system be developed on the national level.

Noting that there has been considerable progress in the last few decades she stressed that there are still major areas needing attention such as educating the public about where risk does and does not exist, minimizing the production of waste, and safely minimizing what is left.

Lowrance concluded by giving thanks to the Center for Environmental Management, to Dana Duxbury, to the Institute for Solid Waste, and to Michelle Mowery for their help in organizing the conference.

HISTORY OF HHW MANAGEMENT

Dana Duxbury, a consultant to Tufts University's Center for Environmental Management and principal organizer of the conference, Dana Duxbury & Associates, Andover, MA.

Dana Duxbury provided background for the current state of HHW management in the U.S. Two recent events that indicate the recognition and maturation of HHW management efforts are a presidential award for a collection program, and a "protest" demonstration in Florida demanding a collection program.

According to Duxbury, the roots of concern about HHW came from and continue to come from five segments of society: homeowners, government (both local and state), industry and the media. Their concerns focus on dealing with the past (the accumulated HHW in people's homes and garages) and dealing with the future so that through education, product redesign, and research the problem can be dramatically reduced or eliminated. She believes that the ongoing message of the HHW management movement has been to encourage citizens to adhere to the waste hierarchy of reduction, recycling, treatment, and disposal.

Duxbury stated that the increase in the number of collection programs is an indication of the growing commitment to face the problem of HHW management. The number of 1988 collection programs represents a 55 percent increase over 1987. The number of states where programs have been held has also increased. There are only seven states now where a collection has never been held.

Another indication of the development of the issue is the increase in the types of programs. There are one-day collections, regularly scheduled yearly collections, collections done a number of times per year, door-to-door collections, specialty programs which deal with the most common HHW items (used motor oil, paint, pesticides, and batteries), and permanently operating collection programs. At present, there are 27 permanent programs which operate at least once per month in the U.S.

One of the issues of ongoing concern is liability. Although the big "L" word, liability, may be an impediment to organizing a collection day, in Duxbury's view, it is a matter of paying now or paying later. And if it's paying later, the cost will be higher.

Other issues are what to do with dioxin-containing HHW and how to determine the percent of solid waste that is hazardous? There are also health and safety concerns, concerns about reducing costs of collection events, and a growing recognition of the need to incorporate HHW management into integrated waste management systems.

Duxbury concluded by saying that there are signs of a promising future for HHW management in the United States. People across the country are supporting the efforts that have already been made, and have demonstrated a willingness to continue to support HHW management initiatives, even if they require changes in consumer behavior.

EUROPEAN PERSPECTIVE/EUROPEAN ACTIVITIES

Gerhard Vogel, Institute for Technology, Vienna, Austria.

Vogel gave an overview of waste management practices in Europe. He stated that there are three goals of waste management: waste avoidance and reduction, waste utilization and immobilization of residuals so that leachate is not dangerous to the environment. In the future, society will use only two substances: those which are re-utilizable and/or those which are fit for final dumping. Technology and imagination will be required to reach this goal.

In Europe, estimates are that one-half ton of waste is generated per person per year. One to two percent of the waste is hazardous. In Austria the estimates are two to four kilograms of hazardous wastes generated per person per year. In the Federal Republic of Germany, estimates are two kilograms per person per year.

Vogel said that the strategy for reduction of HHW involves the following steps: substitution, low-waste or no-waste technologies, labeling and consumer information, and collection. In the production, distribution, and consumer spheres, changes must take place. Governments also must change treatment systems of hazardous waste so that this last part of the chain does not contribute harmful emissions to the environment.

For example, in the production sphere, new technologies can allow manufacturers to produce the same amount of product with lower waste and emissions. In the distribution sphere, packaging can be reusable. For consumers, labeling can be positive, such as Germany's blue angel symbol for environmentally safe products, negative, for products with hazardous constituents, and neutral, giving instructions for use or disposal. Vogel gave a specific example of industry and environmental protection working together. In Germany, recycled paper made from waste paper can display a symbol indicating that it was made with more than 51 percent waste paper.

Vogel gave an overview of collection systems. In discussing the different approaches, (separate collection of HHW or collection by means of the public bringing HHW to a collection point), he stressed the balance between costs and convenience. The greater the convenience, the greater the cost of a collection system.

Specific systems or requirements:

- United Kingdom:

- special collection for asbestos-containing materials
- old drugs taken back at drugstores
- exchange program for button cell and hearing aid - batteries
- collection of school lab wastes without charge, from
- other labs with a charge

- Switzerland:
  - legal limitations for hazardous materials in batteries and in compost
  - Note: with legal limitations -- easy cooperation; without legal limitations -- cooperation is not high

- Denmark:
  - legally required collection sites in every community
  - paints/solvents taken back
  - physicians can take wastes to drugstores
  - as of January 1 legal requirements to take back all
  - batteries

- Germany:
  - prohibition on the use of hazardous substances
  - deposit system on some products
  - button cell batteries are recycled

- Sweden:
  - on demand collection of hazardous materials
  - public collection boxes for batteries
  - old drugs taken back

- Austria:
  - waste incineration illegal in the household
  - collection of school lab wastes
  - recycling of button cell batteries and fluorescent tubes
  - In Vienna: 45 collection stations for HHW

Vogel spoke of the advantages of the collection of secondary raw materials and the energy use of the content of the residuals of waste. In Austria, a "bio-container" is used for collected organic kitchen waste. The contents are taken to a community composting facility. Hazardous materials in this waste pose a problem for composting. This is another reason to remove HHW from the waste stream.

Recycling and reduction of HHW reduce the volume and toxicity of waste and improve the quality of emissions from incinerators, as well as increasing the life span of sanitary landfills. With an integrated waste management system the landfill could last 70 years instead of 10. For now, waste avoidance makes a 15 to 20 percent change. Ultimately, the economic and social system will have to change in order to produce further reductions in volume and toxicity.

CANADIAN HHW MANAGEMENT ACTIVITIES

W. D. (Bill) Armstrong, President, Energy Pathways, Inc., Ottawa, Ontario, Canada.

Armstrong entitled his talk "The Canadian Experience: More Questions Than Answers."

In Canada, the provinces have the prime jurisdictional responsibility for the environment so activities vary from province to province. Within the provinces the ultimate responsibility for all domestic waste collection is municipal, with the degree of support and encouragement for HHW collection again varying from province to province.

Review of Canadian Activities

Alberta

Alberta is the leader in terms of a provincial approach to HHW management. For many years, the province has run a depot system for fertilizers and farm chemicals. It has been at the leading edge of small-scale recycling in Canada for years. The Oil Drop Program which recycles a substantial fraction of the province's recoverable used oil has been operating for five years.

HHW days for collection of other products began in 1985 when the City of Calgary undertook a Household Chemical Clean-up Program. They went from two tons collected in 1985, to three and a half tons in 1986, to five tons in 1987. The City of Edmonton held its first "Toxics Round Up" in the fall of 1987, collecting a phenomenal 30 tons of special waste. A second Round Up during Environment Week in June, 1988 yielded another 30 tons.

The Alberta Special Waste Management Corporation (ASWMC), a Crown Corporation, assisted smaller communities with round ups in the fall of this year. They worked hard to promote these efforts, including the production of a 26-minute video on HHW and the setting up of a HHW hotline. Their goal is to educate municipalities and their citizens on the need for separate handling of HHW and to get them to take responsibility for HHW.

Ontario

Ontario Waste Management Corporation (OWMC) estimates that after industry, households produce the largest quantity of hazardous waste in the province. In 1986, the provincial Ministry of the Environment set up a three year program of grants for municipalities to run special (usually one day) HHW depots.

Collections are multi-material and the province provides posters, utility bill inserts and pamphlets. The Ministry has also provided a guidebook on "How to Implement HHW Collections."

HHW days have been successful. The participation is greater in smaller communities, and improves with successive programs. The total tonnage of waste collected goes up while the amount per household goes down. In Ontario, permanent HHW depots are becoming more popular. Among their advantages are less administration, less cost to operate while there are still good participation rates.

In some municipalities they are finding ways to reduce the amount of HHW that needs to be collected and disposed of. Ottawa for example, has a "blue box" recycling program for used oil.

Manitoba

In 1986, annual HHW days began in Winnipeg and were supported by a number of different agencies. 1988 was the first year in which the Manitoba Hazardous Waste Management Corporation (MHWMC) participated. MHWMC provided technical advice, financial assistance and volunteer support. The three day event was the largest ever, attracting 560 people. 2600 gallons of wastes were packed for disposal and another 900 gallons were recycled. A permanent facility is another part of Manitoba's future plans.

Saskatchewan

No official provincial program exists to encourage HHW collection as yet. In 1988 the City of Regina held a two day collection program and plans to hold one next year. An innovative institutional collection program which ran for two years was popular, but was discontinued due to lack of funding.

British Columbia

British Columbia does not have a formally advertised system for collecting HHW. Environmental and health inspectors will pick up hazardous waste from households in response to specific requests. There are eight HHW storage facilities staffed by trained environmental safety officers. Since neither service is advertised the participation is very low.

Quebec

The Provincial Ministry of the Environment encourages HHW collection, but does not promote collection in any way. There has been very little activity in the province.
[Ed. note: Armstrong did not mention every province.]

General Conclusion

Activities have been relatively low-yield, awareness building events. The cost is relatively high. Paint exchanges and used oil recycling programs lower costs by reducing volume of materials needing handling.

- Interest in permanent depots is growing.
- HHW is increasingly looked upon as a health and safety issue as much as an environmental issue. The moving industry is becoming involved in the effort.
- A cooperative program with paint retailers wherein they set up depots or exchanges for paint is another approach.
- The burden is still mainly on the municipalities. They are the ones, too, which deal with the liability considerations.

Armstrong went on to discuss markets for recycled materials. As he put it, "the key to lowering the cost of HHW collection and disposal is to market as much of the recovered material as possible, rather than disposing of it." The Canadian and Ontario Waste Materials Exchanges are government funded agencies that help companies to find markets for their wastes. Finding markets is difficult since market conditions change constantly. Program operators who have the most success at finding markets for HHW are those who concentrate on local opportunities, setting up community waste exchanges or simply hustling until they find markets. Although market development and recycling are helpful, it is substitution, reduction, or elimination of HHW that should be the goal.

Long-Term Strategies

HHW needs to be broken out into its main product constituents, such as paints, batteries, and pesticides. Next, there needs to be a workable strategy for "cradle-to-grave" management of the products. The key is to persuade industry to accept the inevitability of change and to plan for change rather than being a victim of it. Armstrong remarked that it is possible to get industry to take action, but it involves a lot of work and that it is up to people such as the ones at the conference to push for national change. As long as the real costs of chemical use are externalized it will continue to be difficult and expensive to properly dispose of HHW. In the long term, the real solution is to structure things so that users of household chemicals pay these real costs. In Canada, as in the U.S., "there is no such thing as a free lunch" not even at home.

THE CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION'S VIEWS ON HOUSEHOLD HAZARDOUS WASTE MANAGEMENT

Dr. Robert Etter, Vice President - External Affairs, Research & Development, S.C. Johnson & Sons, Inc., Racine WI.

Dr. Etter gave his presentation as a spokesperson for the Chemical Specialties Manufacturers Association, a non-profit group of over 400 companies formulating, manufacturing and marketing chemical specialty products, the consumer product end of the chemical industry.

After describing the wide range of products for home and automotive use made by CSMA member companies, Etter presented the Association's reaction to the HHW issue. CSMA sees the HHWM conferences as presenting the view that HHW collection is the major answer to HHW problems and believes that CSMA's call for technically supported facts regarding the dangers posed by disposal of their products had not been heard.

Citing studies commissioned by CSMA, Etter stated that only a very small percentage of household waste is identified as hazardous and furthermore, the contribution of packaged consumer goods to the percentage is not that great.

He went on to say that studies show that there is little adverse effect on leachate quality or on the biodegradability of materials in the landfill from toxic wastes. Additionally, most products contain ingredients that easily biodegrade, and Etter cited the home and garden pesticides made today as examples of such products.

CSMA's conclusions are that household products are not a threat to human health or the environment, can safely be disposed of through normal collection procedures, will not, even in significant amounts, pose an environmental threat at landfills, and that landfills should be made to comply with RCRA.

There are household materials which CSMA agrees should be separated from the waste stream:

- Certain pesticides
- Poisons
- Used motor oil and old gasoline
- Car batteries, ammunition and explosives

- Unidentifiable materials of suspicious nature

Other criteria for justifying special collection are:

- Quantity of waste
- Toxicity
- Ability to be absorbed or to biodegrade
- Hazard created by special waste collection
- Cost benefit assessment

When special disposal arrangements are required, they should be voluntary, be performed by licensed waste haulers and should comply with Federal laws.

Sanitary landfills are often cheaper and more appropriate for HHW than hazardous waste facilities. In CSMA's opinion, disposal of HHW in secure chemical landfills would inappropriately use the space which should be used for highly toxic industrial wastes. Incineration is costly and not readily available.

CSMA sees the framework of solid waste disposal as the key issue and its role to bring to light facts and policy options about HHW disposal. CSMA's Household Products Disposal Council is set up to educate, provide information, and to make recommendations on this issue to policy makers and the public.

Etter concluded by stating that wastes other than household products pose a greater threat to human health and the environment, and that the chemical specialties industry is prepared to take an active role in these evolving waste disposal issues.

THE NATIONAL PAINT & COATINGS ASSOCIATION'S RESPONSE TO HHW MANAGEMENT

Robert Foreman, Associate Director, State Affairs Division, National Paint & Coatings Association, Washington, D.C.

The National Paint & Coatings Association represents approximately 700 paint and chemical companies. Foreman outlined Association activities in regard to HHW.

A year and a half ago, NPCA set up an ad hoc committee to determine how the paint industry should respond to HHW management concerns. The committee included a wide range of interested people such as representatives from government, environmental and consumer groups, and HHW experts.

Two significant outcomes of the process were the development of NPCA's new brochure, "Paint Disposal -- The Right Way," and NPCA's new disposal labeling statement for inclusion on consumer paint products.

For the brochure, the objective was to give accurate and appropriate information which is useful for every jurisdiction in the United States. NPCA, with the input and advice of the ad hoc committee, has been able to meet this goal. In addition to educating consumers about proper disposal, it is also hoped that there will be a reduction in their paint waste.

NPCA hopes for broad distribution, through retail outlets and local or state government offices responsible for HHW.

The brochure is free. The only exception is a five dollar postage and handling fee for organizations requesting large quantities of the brochure.

The second activity, the disposal labeling statement, was controversial, and it required a major effort to generate a 21-word statement for nationwide labeling for paints. (NPCA is strongly opposed to disposal labeling statements on a state-by-state basis.)

The statement also was intended to be relevant to more than just the paint industry. Two disposal statements were necessary -- one for solvent based paint products and the other for water based latex paint products. NPCA's policy is that solvent based products should be considered HHW, whereas water based latex products should not.

For solvent based paint consumer products, the labeling statement reads: "For disposal guidance of unused amount, contact a household hazardous waste program or your local or state government environmental control agency."

For water based latex paint products, it reads: "For disposal guidance of unused amount, contact your household refuse collection service or your local or state government environmental control agency."

Foreman concluded by recognizing the growing public concern over the disposal of paint products and offered his Association's cooperation in working with governmental and non-governmental groups to develop programs to address this issue.

SESSION A: HOW TO RUN A COLLECTION PROGRAM

WHAT IS HHW?

Allen Maples, Environmental Scientist, U.S. EPA, Washington, D.C.

According to Maples, of the nearly 82 million households in the United States, all produce at least some HHW. Each individual is calculated to generate one ton of waste per year in the home, some part of which is hazardous.

EPA Definition of HHW

The EPA approach to defining HHW is to combine the federal definition of hazardous waste with the definition household waste. Its definition of HHW is developed under RCRA, the federal law which regulates solid and hazardous waste management. The result, EPA feels, is a workable, generic definition of HHW. More fully defined, a household waste is any solid waste that is discarded or generated from homes and similar dwellings. A household waste is considered hazardous if it is a listed hazardous waste, or if it exhibits these hazardous characteristics: ignitability, corrosivity, reactivity, toxicity.

Under this definition, EPA has developed a list of broad categories of wastes that can be considered hazardous. While these types of products are those that are most often considered hazardous, exceptions do exist in each category.

EPA's List of Common Hazardous Household Products

- Household cleaners. They commonly contain constituents such as sodium hydroxide, caustic soda, petroleum distillates, and isopropanol.

- Automotive products. They usually contain a variety of organic solvents, petroleum distillates that are usually highly ignitable and sometimes emit toxic fumes.

- Home maintenance and improvement products. Organic solvents are also common to this category. This category contains such products as paint thinners, strippers and removers, and adhesives.

- Lawn and garden products. This category covers products such as herbicides, fungicides, and insecticides.

- Miscellaneous. Examples of these are: photo processing chemicals; batteries and electronic items; personal care products, such as nail polish and polish remover; and pool chemicals.

Study of HHW Composition

In April 1987, an EPA-funded study was published entitled "Characterization of Household Hazardous Waste from Marin County, California and New Orleans, Louisiana." The report was prepared by the EPA's Office of Research and Development in Las Vegas, and by Florida State University. The data was collected and synthesized by The Garbage Project at the University of Arizona. (See Figure 1.) The objective of the study was to determine the amount and characteristics of HHW that are entering landfills.

State and Local Definitions of HHW

A number of organizations have attempted to define HHW by listing items considered hazardous. These efforts are most commonly done at the local level when community groups and organizations decide they want to organize a collection program. These lists vary widely. Usually, major categories are assembled and often they are similar to EPA or state definitions, but sometimes they differ.

Washington State's Definition of HHW

In Washington, reference is made to state criteria for dangerous waste in defining household hazardous substances.

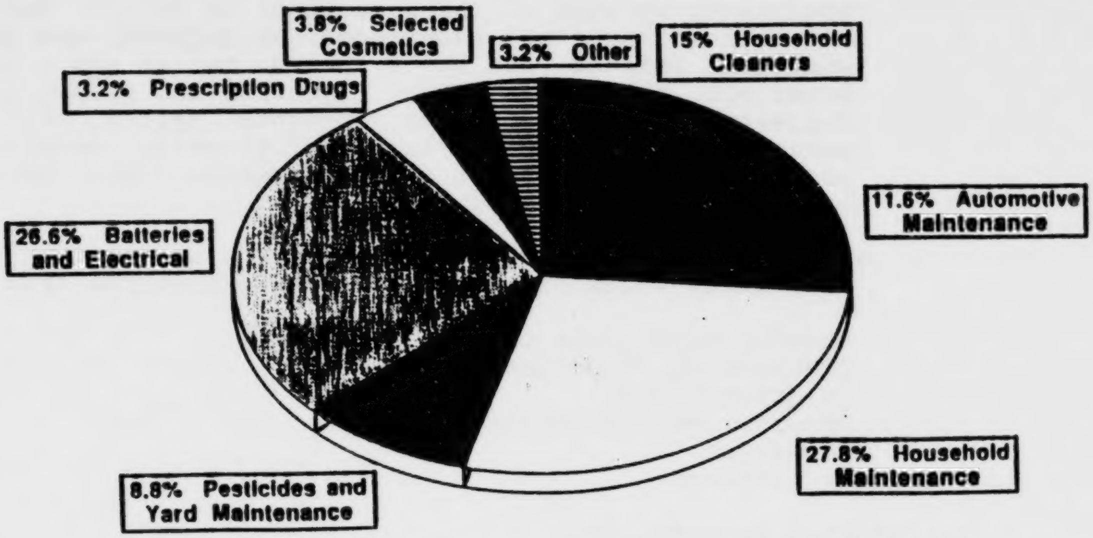
The definition reads: "Household hazardous substance means any liquid, solid, contained gas or sludge, including any material, substance or product, commodity or waste, used or generated in the household, regardless of quantity, that exhibits any of the characteristics or criteria of "dangerous waste" as set forth in Chapter 173-303 of the Annotated code. Such substances become moderate risk waste when discarded."

The Washington State HHW statute requires that local hazardous waste planning guidelines be set up. These guidelines suggest that local planning efforts use chemical ingredients of individual products as a basis for discriminating between hazardous and non-hazardous products. A list is also provided with common household hazardous substances with the common constituents contained in those products.

The state has come up with six broad categories: paint products; cleaning agents; pesticides; auto, boat, and equipment maintenance products; hobby and recreation materials; and miscellaneous.

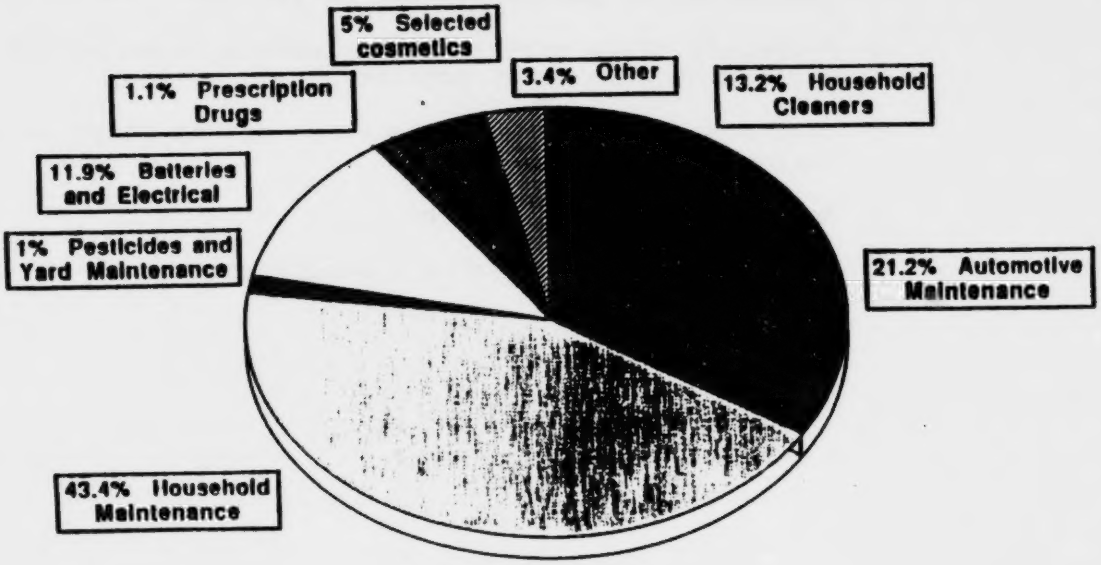
Figure 1

Composition of HHW: Marin County, California*



- Source: Characterization of Household Waste from Marin County, CA, April 1987 (EPA Study)

Composition of HHW: New Orleans, LA*



- Source: Characterization of Household Waste from New Orleans, LA, April 1987 (EPA Study)

Iowa's Definition of HHW

The Iowa definition reads: "Household hazardous material means any product used for residential purposes and designated by rule of the Department of Natural Resources and may include hazardous substances, as defined, and hazardous waste, as defined, and shall include but is not limited to: motor oil, motor oil filters, gasoline and diesel additives, degreasers, waxes, polishes, solvents, paints, with the exception of latex based lacquers, thinners, caustic household cleaners, spot or stain removers with petroleum base or petroleum-based fertilizers.

A unique aspect of the Iowa definition is the list of substances which are excluded. These products are:

Laundry detergents or soaps
Dishwashing compounds
Chlorine bleach
Personal care products and soaps
Cosmetics
Medications

Industry Perspective

The Chemical Specialties Manufacturers Association (CSMA) has taken a position on HHW maintaining that certain household materials should be segregated from the general waste stream. CSMA believes that these materials are easily distinguishable from normal household consumer products.

These materials include:

- Certain pesticides that have been scientifically determined to persist in the environment, such as DDT
- Extremely toxic materials that pose a human health hazard, such as arsenic or strychnine
- Used motor oil and gasoline which can be recycled and refined.
- Ammunition and explosives
- Unidentified materials of a suspicious nature.

CSMA's Definition of HHW

"A discarded material, product or mixture that reaches groundwater from solid waste landfills or improper disposal, or reaches surface water from disposal in sewer systems or septic systems, IN SUFFICIENT QUANTITIES to create, by itself or in conjunction with other materials, a verifiable level of toxicity that could affect human health or the environment."

The National Paint and Coatings Association (NPCA).

In an April 1987 HHW policy statement, NPCA generally supported the federal definition of HHW as put forth by the EPA. The following points were made by NPCA in its policy statement:

- Only small quantities of hazardous waste are disposed of in municipal landfills.
- Most products are hazardous only in large bulk quantities.
- The small amount of hazardous material is absorbed by solid waste.
- More scientific evidence is needed.

Public Interest Groups

The National Audubon Society's (NAS) perspective on HHW is an example of a public interest group position.

NAS's position is that a product should be considered to be hazardous if it exhibits any characteristics which are toxic, reactive, ignitable, corrosive, infectious, or radioactive.

NAS has developed a generic list, as have many other groups, which includes pesticides, herbicides, paint products and preservatives, cleaners, and automotive wastes or products.

Conclusion

Organizations concerned with managing HHW have adopted various approaches in defining which discarded materials are a threat to human health and the environment. EPA believes that most household products are safe if used properly and stored safely. The agency believes that research should focus on the fate and effects of these products when disposed.

ACTUAL AND POTENTIAL PROBLEMS

David Galvin, Senior Water Quality Planner, Seattle Metro Water Resources, Seattle, WA.

For problems caused by HHW there is still relatively scarce documentation. It seems logical, however, to assume that products which are hazardous when used or stored in the home might also be hazardous when they are thrown away.

Solid waste is defined as any waste that is not disposed of down the sewer. The 1984 figure for annual municipal solid waste generation in the United States was 133 million tons. For residential collections that works out to a little over two pounds per person per day.

In respect to the amount of the municipal solid waste stream that is hazardous and how much of it comes from households, Galvin cited several studies. In a 1985 study done for the Puget Sound Council of Governments by Cal Recovery Systems, Inc. about one percent of the municipal solid waste stream was hazardous and households were found to have contributed about half of that amount, by weight. The University of Arizona's Garbage Project did studies in Marin County, California and New Orleans, Louisiana which found that .35 to .45 percent of municipal solid waste picked up at curbside was hazardous.

All of the studies are finding HHW in municipal solid waste at around one-half of one percent. The significance of such figures is open to much debate, but hazardous wastes are in the waste stream and many of them are coming from households, not small quantity generators.

Galvin looked at the various waste streams and the possible problems HHW might cause in the municipal solid waste stream (MSW).

Sanitation worker injuries and equipment damages are linked to HHW. There has been no national attempt to consolidate information on injuries to sanitation workers, but most public works departments will acknowledge incidents. Municipal compactor trucks have been damaged in incidents all over the U.S. due to fires and explosions.

HHW has an impact on municipal landfill leachate. Ninety-five percent of all municipal solid waste is landfilled. Twenty percent of all Superfund sites are old municipal landfills. Although there are many things going into landfills from sources other than households, there is reason to believe that household hazardous wastes contribute to the toxicity of landfill leachate.

Five percent of the municipal solid waste in the U.S. is currently burned. Galvin pointed out that sludge residues, fly ash and grate ash in incinerators contain concentrated levels of heavy metals and complex organics. The EPA is involved in determining if this ash residue is a hazardous waste or not.

Outside the MSW, HHW makes its contribution or has the potential to cause problems in municipal wastewater, in septic tanks, and in municipal sewerage systems. HHW constituents can enter the environment directly through storm drains and direct dumping on the ground.

All too often storage is the management option people use for HHW. Materials are often a fire hazard or a poisoning threat. For these reasons, poison control centers and fire departments are taking an increasing interest in collection programs. At the least, HHW collection programs should provide homeowners with a safe way to dispose of these old, banned, or cancelled products.

Having outlined the reasons for his concern, Galvin expressed his hope that better ways to manage HHW be found so that in the future there would be hazardless household waste.

NON-COLLECTION MANAGEMENT OPTIONS

Gina Purin, Norcal Solid Waste Systems, Inc., San Francisco, CA. (Note: Until November 1988, Gina Purin was with Hazard Evaluation System and Information Service, California Department of Health Services, Berkeley, CA.)

Purin gave some of the options available to people when collection programs are not available to them.

A waste exchange program which enables products to be reused is one of the first possibilities to consider. In Santa Monica, CA such a program was set up for paint. Citizens can bring in paints and although some of the smaller quantities of paint are incinerated, bulked paints are made available to the community. The waste paint exchange was an outgrowth of HHW collection programs in which much of the HHW was paint. As of November 1988 the program has been made permanent and the facility will be open five or six days per week.

Home treatment is another option. Citizens are educated as to which products need to be brought in to a collection program and which can be treated at home. For example, products which are designed to go down the drain when in use can be disposed of in the same way. In other words, people should not bring drain cleaners, detergents, or soaps to collection days. If not used up through reuse then the product can be poured in small amounts down the drain. Vitamins, ingestibles, over the counter medications are other examples. In some communities anti-freeze can be poured down the drain, but only if it leads to a sewerage treatment plant. It is important to check a given community's policy before using this disposal method. In Missouri, in fact, protocols are being developed for proper home treatment.

Home management is yet another option and is really an education effort. It instructs citizens on how to use, store or safely get rid of a given product. Homeowners receive instructions such as: use up a product or give it away, do not overbuy, never leave product uncovered, leave product in original container, avoid mixing products, avoid aerosols, and keep away from children and pets. It is important to give people the reasons why they are being asked to do the various procedures. People need to feel that they do make a difference in the size and toxicity of the waste stream.

Toxic use reduction is the elimination or reduction of toxic products in the home. It encourages the use of safer products in the home. There are products, however, for which there are no substitutes. In those cases, recycling, treating, or reusing the products is encouraged. A user fee has been proposed by a number of people as a way to provide funds for handling these products properly. In this way, those who use the product would pay for its proper disposal, and those who do not use it would not bear the costs of disposal.

In conclusion, Purin said that there will always be the need for collection programs, particularly as long as products such as DDT are stored in people's garages. In the meantime, she hoped her suggestions would be helpful to those who do not yet have collection programs to go to.

ALTERNATIVE MANAGEMENT OPTIONS

Kate Gage, Program Coordinator/Planner, Martha's Vineyard Refuse Disposal District, Martha's Vineyard, MA.

A review of environmental concerns in broad social, economic and cultural terms provided a context in which the need to use alternatives in our homes was made compelling. Gage stressed that the individual choices consumers make can have an impact on industry and can encourage safer products with better packaging and improved labeling. Responsible decision-making is another component of proper selection and use of products. In addition to educating oneself about what is meant by "non-toxic," consumers are sometimes faced with the need for products that are harmful and for which there are no alternatives, yet there is some latitude. For example, unleaded fuel is less harmful than diesel fuel. When using a hazardous product, it should be used according to directions, completely used, or if not used up, saved for an HHW collection event.

Gage displayed hand painted cardboard cut-outs of alternatives, such as cucumbers and vinegar, to show how available the alternatives are, and how natural it is to use them. (See Figure 2.)

Figure 2

(Painted Cardboard props)

Material	Can Be Used For
Vinegar	1. Room deodorizer (1 T in 1 C water, in saucer) 2. Prevent clogged drains (1/2 C vinegar plus 1/2 C baking soda wait, then pour in boiling water) 3. Remove labels, decals, etc. 4. All purpose cleaner. Windows. For scouring, use salt and vinegar. 5. Add 1 C to hot tub and hang smoky garments in steam. 6. Eliminate soap residue in wash. 7. Remove onion odors from hands.
Salt	1. Eliminate stains/odors from wooden cutting boards (rub in salt). 2. Scouring powder. 3. Drain unclogger with hot water.
Baking Soda	1. All purpose cleaner. 2. Toilet bowl cleaner (sprinkle in baking soda and drizzle with vinegar. Wait.) 3. Scouring powder. 4. Neutralizes carpet odors. 5. Add to wash for fresh smelling laundry.
Spices	1. Vanilla: room/car deodorizer (on a cotton ball) will remove even skunk odors 2. Cinnamon/Cloves: room deodorizer (boil) 3. Rosemary: repels fleas 4. Mint: plantings keep ants away

SOURCE: Gage, Martha's Vineyard Refuse Disposal District

Figure 2
cont'd

Hints for Pests:

Ants	1. Cornmeal (they drink water and explode). 2. Wash kitchen surfaces with vinegar and water. 3. Cucumber peels in problem areas (contain trace amounts of arsenic!).
Fleas	1. Vacuum. 2. Brewer's yeast and garlic in pet's food. 3. 1 tsp. vinegar to 1 qt. pet drinking water.
Roaches	1. Baking soda and powdered sugar. 2. Use with caution around children/pets: Borax & flour along baseboards Oatmeal/flour/plaster in dishes
Moths	1. Wash garments. 2. Put garments through dryer. 3. Sachets: lavendar rosemary/mint/thyme/cloves rosemary/mint whole peppercorns cedar chips 4. Store clothes in cedar chest.

SOURCE: Gage, Martha's Vineyard Refuse Disposal District

SESSION B: SPECIAL PROGRAMS

KING COUNTY, WA

Richard Conlin, Project Director, Metrocenter YMCA, Seattle, WA.

The Seattle/King County program is believed to be the biggest program in the country. In three days (two days in the spring, one day in the fall) 11,400 households (8,500 cars) contributed HHW to the collection. Along with the purpose of removing old HHW from homes and safely disposing of all HHW, old or new, another program objective is educating people to buy, use, and dispose of HHW properly. For that reason, each participant is given a packet of educational materials to take home from the collection.

Strategies used in the Seattle/King County collection effort include:

- o Corporate and community volunteer involvement
- o Shared funding among cities in the county, pro-rated according to population
- o Corporate donations (for example, two contractors donated all of their labor costs for the spring collection)
- o Widespread publicity --
  a PSA aired on local TV stations, production costs were donated by one TV station, approximately 20-30 newspaper articles appeared, local community groups distributed flyers, eight of nine City Council members sent flyers (400,000 were mailed)
- o Broad parameters --
  choice of times
  four locations
  all materials accepted
  no geographic restrictions
- o Management structure --
  three tiers of management staffing: a combination of county employees and community/corporate volunteers
- o Training and safety -- required two-three hour training session

Overview:

- o Experience
  benefits for collection day efficiency benefits for more efficient post-collectio clean-up.

- o Comprehensive HHWM Plan
  Mix of permanent sites and collection days
  At least two permanent sites projected by mid-1989.

- o Costs and the problem
  50 percent of households have HHW
  Two to three percent of households come to collections
  Cost: 39 cents per capita

  Projected cost for handling HHW of the 50 percent of households: $13 per person, or in other words, $1.30 per person over a ten-year period.

- o Statistic:

  60 tons of HHW collected in 1985, representing three percent of total amount needing to be brought in.

Conlin concluded his presentation with slides showing specific techniques and practices developed to handle the large numbers of people and the large amounts of waste -- such as banners to attract people, write-in-the-rain paper, carpools, and recycling of the cardboard boxes used to bring in HHW.

INDUSTRY SPONSORED

James Conner, Manager, Waste Minimization Services, Dow Chemical USA, Midland, MI.

Conner made the distinction between corporate-sponsored HHW collections for corporate employees only, and those which serve the community at large. He went on to talk specifically about Dow Chemical's efforts.

To date, Dow has run programs in Louisiana, Texas, California, Michigan, Ohio, Missouri, Connecticut, and one in the United Kingdom. Dow sees these programs as promoting the "personalization of waste management." In other words, these programs promote recognition by the public that the same hierarchy of source reduction, reuse, recycling, and resource recovery applies to homeowners as it does to industry.

With the exception of the facilities in Dow's Eastern Division, the waste collected can be handled in Dow's own facilities which have wastewater treatment plants, landfills, and rotary kiln incinerators to handle waste. (In the Connecticut collection, they cooperated with Northeast Solvents, a Massachusetts based firm.)

The rates of participation and the costs vary. In one example, for 31,000 pounds of waste collected and disposed, the cost was 41 cents per pound. The types of wastes collected are the usual ones, with paint products accounting for 30 percent of the total.

Conner pointed out that their experience indicates a need for designated areas for collection events, and that overtime manpower has become a shared responsibility with the local community rather than Dow's responsibility.

Publicity is often done in partnership with the community. An example is a school program on HHW for sixth graders in Midland, Michigan. As for liability, Dow generally assumes it.

Conner pointed out that other corporations such as Chem-Processors in Seattle, Washington and Union Carbide and Rollins Environmental Services in Texas have sponsored or co-sponsored programs. The involvement of industry in HHW collections is positive, a "good news story."

As for the future, he recommended that participants attend the final plenary session panel of the conference where T.K. Smith of Dow was to speak on Future Trends.

PRESIDENTIAL AWARD-WINNING

Suzan Craik, Extension Agent, Chesterfield County Extension Service, Chesterfield, VA.

Craik outlined the steps taken in her county to organize their first program, held October 1986 and recognized in July 1988 by President Reagan as one of the winners in the Take Pride in America Program competition.

The planning committee for the collection event was composed of representatives from the Keep Chesterfield Clean Corporation, the fire, police, health, sanitation, and utilities departments, as well as the county Attorney and the Risk Manager. There were advisors from the Virginia Department of Waste Management in attendance at planning meetings.

Because it was a first time effort, they had no way of estimating the amount of HHW that would come in. To ensure adequate funding, dollars were solicited from local business and industry. $8,750 was raised in this manner.

The event was publicized by a flyer in utility bills (sent to 50,000 homes), by handbills distributed at appropriate retail outlets throughout the county, including paint and drug stores, and a 30 minute program aired on a local cable T.V. station every day for the week prior to the event.

Disposal costs were greatly reduced because of the cooperation of several local businesses and two county departments. For example, 79 car batteries were taken by a battery dealer, the Fire Department took 55 gallons of kerosene for use in fire training, and items that could safely be disposed of at the landfill were put in the county compactor truck.

The very positive public response and the national recognition given to the program resulted in the County Board of Supervisors including money in the budget for a two-day, two-site event scheduled for April 1989.

SESSION C: BATTERIES

WHAT'S THE PROBLEM?

Allen Hershkowitz, President, Municipal Recycling Association, Elmsford, NY.

Hershkowitz began by posing the following questions: should household batteries be recycled; should household batteries be incinerated; can we get rid of household batteries entirely? He doesn't consider the last question a viable option aside from making greater use of rechargeable batteries.

Hershkowitz noted that the National Electrical Manufacturers Association has concluded, based upon U.S., British, and Japanese studies, that there are not environmental or health reasons to separate household batteries from municipal solid waste (MSW). The Swedes, however, have concluded that batteries do pose a threat to the public and the environment. The Swedish battery incineration experience is not directly transferable to the U.S. because Sweden incinerates fifty percent (much more than the U.S.) of its MSW.

Swedish Studies/Observations

A 1986 Swedish study concluded that about 35 percent of all background levels of mercury in their environment was associated with incineration of batteries in MSW.

A second study, which was a controlled study by the Environmental Protection Board, of pregnant women in New Zealand (see Swedish Environmental Protection Report 3080) indicated that the children of pregnant women who were exposed to mercury in fish had a "highly statistically significant" probability of having developmental abnormalities (based upon the Denver Development Screening Test).

In Stockholm, an incinerator that had been emitting 750 kgs/year of mercury in fly ash reduced its emissions to 150 kgs/year after a voluntary battery separation program was initiated in 1983 (along with more stringent pollution controls). These studies and observations led the Swedish government to institute a mandatory program to address the incineration of household batteries.

Swedish Response

In 1986, Sweden mandated that all household batteries must be separated and not mixed with household waste. A mandatory collection program to capture batteries from MSW was instituted.

The Swedes, however, are not recycling batteries. They have concluded that batteries do not belong in incinerators because of the threat to public health and environment, and because they are generally not combustible. They have not yet developed the technology to effectively recycle batteries, and have chosen to stockpile household batteries until they are prepared to undertake recycling or some other preferred management option.

Japan

The Japanese government undertook a study of mercury in the background environment and concluded that incinerated batteries do not pose a threat to health and the environment. Nonetheless, the government has responded to public opinion by adopting wide ranging collection programs to separate batteries from MSW. Furthermore, in 1983 the government worked out an agreement with the battery manufacturers that the amount of mercury contained in batteries would be reduced by five-sixths. The Japanese concluded that a collection/recycling program was more cost effective than trying to persuade the public that batteries are not a problem.

Unlike Sweden, Japan has had success recycling household batteries. The government has set up a plant that successfully recycles zinc, silver, and mercury. The major problem has been how to get more batteries to the facility.

Conclusions

Hershkowitz concluded that the issue on batteries is not simple and clear cut. He said that for many people it seems to be common sense not to put non-combustible materials with volatile metals into an incinerator, but there are indications that collection and recycling are also associated with environmental and cost issues. He supports collection and recycling, but suggested that people take a good, sober look at the whole issue before undertaking any costly measures that may raise a lot of public concern.

COLLECTION OPTIONS

Marie Steinwachs, Assistant Director, Household Hazardous Waste Project, Southwest Missouri State University, Springfield, MO.

Battery collection programs are being set up in various communities around the United States. A few of the programs are summarized below.

Southwest Missouri. The HHW Project of Southwest Missouri State University contacted local jewelers, hearing aid stores, pharmacies, camera stores, and other businesses who were already collecting mercury and silver oxide "button" batteries from their customers. The stores were asked to be included in the Project's recycling directory as stores that are willing to accept batteries from the public. More than 50 stores are participating in the program.

Contact: Marie Steinwachs, Household Hazardous Waste Project, 901 S. National, Box 87, Springfield, MO 65804.

Bellingham, Washington. In September of 1988, the City of Bellingham and Thermal Reduction Co., which operates an incinerator for the city, launched a button battery collection program. Their stated goals are "to increase public awareness about the problems associated with batteries, to reduce concentrated sources of metal in the waste stream, and to return to industry those batteries which can be recycled." The City of Bellingham and TRC have distributed one-quart buckets, along with informational flyers, to 44 participating stores. Program participants were identified in large newspaper ads and posters which were distribute around town. TRC will collect, package and mail the batteries to the Mercury Refining Company in Latham, NY.

Contact: Lisa Schnebele, Thermal Reduction Co. Inc., 1524 Slater Rd., Bellingham, WA 98226. 206-384-1057.

Environmental Action Coalition -- New York City. The Environmental Action Coalition has been operating an apartment house recycling program in New York City for newspaper, glass, plastics, aluminum, and other materials under a contract with the New York Dept. of Sanitation. This past spring, they began to establish collection places for button batteries in locations that sell new batteries, focusing on camera, watch and hearing aid stores, and doctors offices. With a small grant, EAC was able to manufacture brightly marked collection boxes with battery recycling logos. These boxes were distributed to 185 locations, along with added mailing envelopes, instructions, and 3" x 5" battery fact sheets for distribution to customers as they buy new batteries. When battery boxes become full, participating stores seal the batteries in a provided zip-lock plastic bag, put it into the pre-addressed, padded mailing envelope and return it c.o.d. to EAC. The Coalition then records the weights and sends the batteries to the Mercury Refining Company. In its first three months the program netted 50 pounds of batteries.

Contact: Tim Forker, Environmental Action Coalition, 625 Broadway, 2nd Floor, New York, NY 10012. 212-677-1601.

New Hampshire/Vermont. The NH/VT Solid Waste Program is one of the pioneers in this country for community battery collections. Approximately 70 retail stores in 26 cities and towns within the two states are participating in collecting all types of dry cell batteries from the public. The stores were each initially issued a five-quart bucket with a battery recycling logo to hang near displays where batteries are sold. Customers are encouraged to return old batteries when they purchase new ones.

Local organizations such as the Boy Scouts, League of Women Voters, Retired Senior Volunteers Program collect the batteries from buckets on a regular basis. When enough batteries have been collected, the Scouts separate out the saleable batteries (the mercury and silver oxides) and seal the rest in 55-gallon drums. These are saved for the next household hazardous waste collection when the batteries can be disposed to a hazardous waste landfill at a cost of $1200 per ton. They are currently building a centralized holding facility at the Allied Signal incinerator, where batteries can be stored until there are sufficient quantities to call a hazardous waste handler.

Since the program began in April 1987, the NH/VT Solid Waste Program has collected nine tons of batteries. Their records are showing a steady increase in participation with each collection.

Contact: Connie Leach, Solid Waste Div., Agency of Natural Resources, 103 S. Main St., Waterbury, VT 05676. 603-543-1201.

Steinwachs offered the following recommendations for federal involvement:

- Fund research into new reclamation technologies
- Provide incentives for industries to use the reclaimed metals over the virgin metals
- Serve as a watch dog over reclamation industries.

Steinwachs proposes that industry should:

- Provide assistance with collection programs
- Continue research into ways to reduce mercury content in batteries
- Manufacture more rechargeable appliances so that the sale of nickel cadmium batteries can be reduced.

AUTO LEAD-ACID

Robert Steinwurtzel, Andrews and Kurth, Washington, D.C.

Steinwurtzel is an attorney who spoke for both the lead-acid manufacturers, Secondary Lead Smelters Association (SLSA), and the Battery Council International (BCI). The SLSA, a non-profit trade organization, represents approximately eighty percent of the capacity in the U.S. industry. BCI is an international organization that represents battery manufacturers throughout the world.

Liability

Municipalities can be held liable under CERCLA for clean up costs associated with their hazardous waste. It is estimated that approximately fifteen million batteries per year are disposed of improperly in the U.S., often in municipal landfills. Since lead-acid batteries contain materials such as lead and sulfuric acid which can be released into the environment when disposed, they pose a liability issue to municipalities.

Steinwurtzel stated that although there is research exploring alternatives to lead-acid batteries, none of them are deemed economically or technologically feasible today or in the near future.

Secondary Lead Smelting

There are approximately twenty-three secondary lead smelters in the U.S. today, down from over sixty smelters in 1980. Spent lead-acid batteries are the major raw material used by the industry, so they have an incentive to see that lead-acid batteries are recycled and not disposed in municipal landfills.

About eighty percent of the batteries generated are being recovered and recycled by the secondary lead industry. The secondary lead industry recovers the lead and neutralizes the sulfuric acid, the plastic casings are recycled and sold back to plastics manufacturers, and the rubber is recovered or rendered non-hazardous and disposed of properly.

There are several impediments to the recycling chain. Assistant Secretary of Commerce, Michael Kelly, refers to the term "environmental gridlock," meaning that well-intentioned environmental statutes and regulations are implemented in a manner that impedes their original purposes. For example, the generators and transporters of lead-acid batteries could be (and have been) held liable for clean up of a release to the environment that occurred at a recycling plant. As a result, said Steinwurtzel, many scrap yards and collectors have fallen out of the recycling chain due to concerns about liability.

Steinwurtzel also expressed concern about the EPA definition of hazardous waste as it applies to recyclable lead-acid batteries. He maintained that there should be some flexibility in the law so that batteries that could be used as a recycling resource are not classified as a hazardous waste material.

Promising Trends

Steinwurtzel identified some of the actions and trends occurring at the federal and state level.

- o EPA has developed a national strategy for managing solid wastes. EPA proposed several alternatives that the secondary lead and battery industries support and encourage. These proposals include banning the disposal of batteries in landfills, banning battery incineration, and encouraging consumer awareness of the importance of recycling lead-acid batteries.

- o Senator Baucus from Montana introduced legislation including banning batteries from landfills and incinerators, and attempted to provide limited CERCLA liability exemptions for those that supply and transport the batteries that are recycled by the secondary lead smelters

- o At least five states have enacted legislation addressing the collection and proper disposal of spent lead-acid batteries. In 1987, Minnesota passed a bill prohibiting landfilling of batteries, and requiring wholesalers who sell lead-acid batteries to accept spent lead-acid batteries. It also requires retailers and wholesalers to post notices in their place of sale which talk about the benefits of recycling.

Where Do We Go From Here?

Steinwurtzel stated that there should be a goal of 100 percent recycling. He suggested the following steps to promote the realization of this goal:

- o Keep lead-acid batteries out of municipal landfills or incinerators.

- o Consumers must be educated about the dangers of improper disposal.

- o Liability of collectors and transporters should be limited.

- o Wholesalers and retailers should be required to accept spent battery returns.

- o Tax incentives for the use of recyclable materials will promote the secondary lead smelting industry.

DRY CELL

Raymond Balfour, Rayovac Corporation, Madison, WI.

Raymond Balfour, Vice President of Rayovac Corporation, a manufacturer of batteries in the U.S., provided an industry perspective on dry cell batteries. He noted six U.S. and European studies conducted between 1975 and 1988 that indicate that household dry cell batteries do not pose a threat to public health or the environment when they are disposed in landfills or incinerators. He added that while EPA's Municipal Solid Waste Task Force's draft report of September, 1988 made many references to lead-acid batteries, household batteries were not singled out for concern in the report.

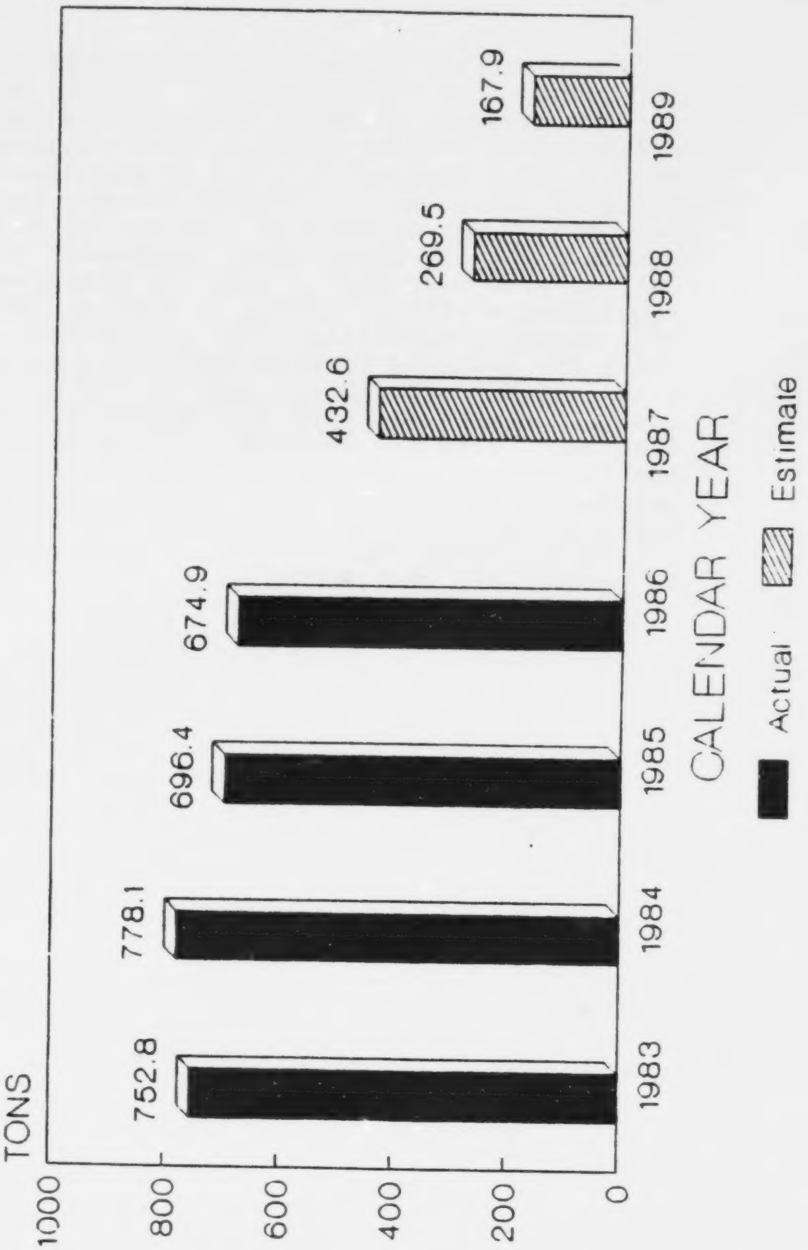
Balfour and the other dry cell battery companies that belong to the National Electrical Manufacturers' Association are concerned with consequences of proposed battery collection and disposal programs. Batteries that residents accumulate in homes before they bring them to a collection depot pose a risk to human health (especially children) in the event that they are ingested or impacted in the nose or ear. This is because electrical current passing between the terminals can set off a chemical reaction and cause a chemical burn in the surrounding body tissue.

Furthermore, the aggregation of large quantities of batteries will result in physical and electrical contact between batteries. This generates heat and hydrogen gas, which creates dangers of fires or explosions if there is not sufficient ventilation. An example of an explosion and injury occurred in 1985.

Balfour cited gains the industry has made in reducing the use of mercury in household batteries, including the phasing out of mercuric oxide hearing aid batteries by zinc air batteries. (See Figure 3 for a graph highlighting the decline in the use of mercury in U.S. consumer battery production.) The industry maintains that results such as these have come from voluntary efforts, that no government regulation can possibly accelerate the industry's source reduction efforts and progress, and that there is no environmental or health evidence showing a need to collect and recycle batteries. A market for recyclables in the U.S. exists only for silver and mercuric oxide batteries, and these markets are likely to decrease as the use of mercury continues to be reduced.

Figure 3

MERCURY USAGE IN U.S. CONSUMER BATTERY PRODUCTION



4/1/87

SOURCE: Balfour, Rayovac Corporation

DRY CELL

Harry Fatkin, Polaroid Corporation, Director of Health, Safety and Environmental Affairs, Cambridge, MA.

The Polaroid Corporation has worked to eliminate the addition of mercury from its batteries. Efforts began in Switzerland in 1986 in response to Swiss controls for batteries. Controls stemmed from concern about mercury released during incineration of batteries that are present in municipal solid waste streams. Polaroid succeeded in reducing mercury by 50 percent during 1987, and mercury was eliminated from all of Polaroid's battery manufacturing by April 1988. Tightened chemical specifications have enabled Polaroid to meet its film/camera performance requirements without having to find a replacement for mercury in the company's batteries. The new mercury-free battery reduced costs for Polaroid by eliminating the cost of purchasing and disposing mercury and the cost of industrial hygiene and worker protection programs that are related to its use. Waste water treatment costs are reduced, and the absence of mercury increases the likelihood of successful recovery and recycling of a higher percentage of battery manufacturing wastes, said Fatkin. These costs are expected by Polaroid to offset the development costs of the mercury-free battery within three years, as well as to serve to protect the environment.

SESSION D: REDUCTION AND OTHER MANAGEMENT OPTIONS

ALTERNATIVES

Kathy Betzhold, Natural Resources Chair, League of Women Voters, Albany County, Delmar, NY.

Betzhold co-authored a book, Household Hazards: A Guide to Detoxifying Your Home, for the League of Women Voters of Albany, NY. The book grew out of a local study conducted by the Albany League of Women Voters. The manuscript covers the following areas: toxics; alternatives (see Figure 4); general cleaning in the home; pesticides; automotive products; art and hobby materials; paints and solvents; plastics; indoor air quality; and a guide to citizen action.

Betzhold said that the book has been well received by the public, and distribution of the 10,000 copies that had been printed was completed in five months. The book includes an extensive reference list and lists of relevant telephone numbers.

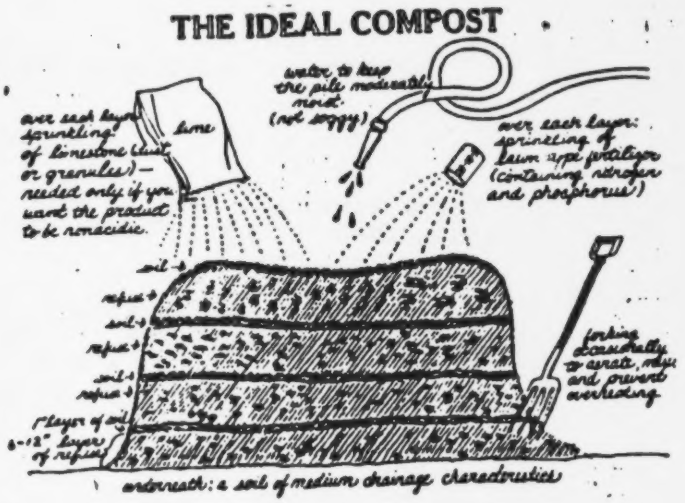
The alternatives recommended in the book require a "change of mindset" as they require consumers to use products that may look and respond differently from traditional products. Betzhold warned that these alternatives may still have some hazardous constituents and must be labeled and stored carefully, as well as used precisely as directed in her publication.

According to Betzhold, most alternative products are quite simple to make. Many household cleaning agents can be made once and stored and do not require mixing at each use. Others are made from single ingredients and require no mixing. She said that frequently, alternatives to toxics can reduce consumer expenses. Bleach, for example, is considerably cheaper than toilet bowl cleaner.

Betzhold concluded that although many of the substitute recipes for ready-made products may seem old-fashioned and quaint, it should not be forgotten that their commercial cousins are often extremely dangerous. This is not a simple, back-to-nature notion, said Betzhold. It is about the serous health and safety threats posed by hazardous materials in the home, and about individual choices, which when added together create safer communities.

Figure 4

Compost
Diagram from
Times-Union, Albany,
NY 9-11-85


THE IDEAL COMPOST
over each layer: sprinkling of limestone (dust or granules) — needed only if you want the product to be nonacidic.
lime
water to keep the pile moderately moist (not soggy)
over each layer: sprinkling of lawn-type fertilizer (containing nitrogen and phosphorus)
soil
refuse
soil
refuse
soil
refuse
1" layer of soil
6-12" layer of refuse
forking occasionally to aerate, mix and prevent overheating
underneath: a soil of medium drainage characteristics

All-purpose plant spray

1 teaspoon ground black pepper
1 garlic bulb (1 whole head)
1 small onion
1 tablespoon cayenne pepper
1 quart water
1 tablespoon liquid soap or detergent

Chop or grind garlic and onion. Add cayenne and mix with water. Let steep one hour or as long as three days before using, then add soap. Store, covered, in refrigerator up to one week.

Paint brush cleaner

Place brush in an old saucepan and cover with white vinegar. Bring to a boil. Turn heat down and simmer for a few minutes. Remove brush and wash in soap and warm water.

SOURCE: Betzhold, The League of Women Voters, Albany County, NY

Figure 4
cont'd

Basic Ingedients For Alternative Mixes

*Ammonia	cleaner
Baking soda	cleaner, deodorizer, fire extinguisher
Boiling water	weed killer, drain cleaner
*Borax	cleaner, laundry aid, roach killer
Brushes (tooth, scrub, bottle, toilet)	cleaner
*Chlorine bleach	cleaner, disinfectant
Dish soap (liquid)	cleaner, pesticide
Lemon	cleaner, deodorizer, stain remover
Nylon scrubber	cleaner
Plumber's snake/plunger	drain cleaner
*Rubbing alcohol	cleaner
Salt	cleaner
Steel wool/sand paper	cleaner, paint remover
Vinegar	cleaner, deodorizer
*Washing soda	cleaner, laundry aid

*These products are not completely nontoxic and therefore should be used with caution. They are, however, less toxic than the mixes of chemicals sold as their commercial counterparts.

Drain Cleaner

½ cup baking soda
¼ cup warm white vinegar

Pour down the drain. After 15 minutes, flush with boiling water to dissolve crystals.

Oven Cleaner

Fill spray bottle with equal parts of ammonia and water. Spray on oven walls, close the door and leave on overnight. Wash clean the next day.

Toilet Bowl Cleaner

1 teaspoon ammonia
1 cup hydrogen peroxide
2 quarts water

Mix ingredients. Pour into the toilet, let stand one half-hour. Brush and flush.

SOURCE: Betzhold, The League of Women's Voters, Albany County, NY

Reproduced from best available copy.

RECYCLING

Cassandra Goldwater, HHW Program Manager, Massachusetts Department of Environmental Management, Boston, MA.

Goldwater spoke about recycling options for used oil, paints, anti-freeze, and batteries. Used oil is one of the largest quantity materials brought to HHW collection days. An estimated 40 million gallons are disposed in landfills each year, although used oil is a recyclable product. There have been suggestions that government subsidize the recycling market because the market for used oil rises and falls with the market for virgin oil.

Many communities are recycling used oil. For example, Sunnyvale, California runs a curbside collection program for oil and other recyclables. Palo Alto, California has a weekly curbside collection for used oil which is used as a diesel fuel additive. The closer the collection is located to a re-refiner, the more cost-effective it is to recycle used oil.

Paint products are the materials collected in the largest volume at HHW collections, making up 75 to 80 percent of the HHW stream collected in Massachusetts. Dried out paints are generally considered acceptable to be disposed of as solid waste. Santa Monica, California, currently operates a paint exchange where residents can exchange paints with other participants. During the first 15 months of the program, 2500 gallons of paint were collected, with 1000 gallons used as a fuel and 600 gallons brought home by the participants. The Minnesota Public Interest Research Group set up a referral service for exchanges, and paint exchanges have also been set up in several states including Connecticut and Massachusetts.

Anti-freeze and batteries are also candidates for recycling. Anti-freeze can be re-used after metals are filtered out, and can also serve as a fuel supplement. Auto batteries are recyclable by lead smelters and scrap metal dealers. In locations such as New York City, photography and jewelry stores have set up battery collections. They send collected materials to recyclers for a profit.

EXAMPLES FROM EUROPE

Gerhard Vogel, Institute for Technology, Vienna, Austria.

There is much more recycling in Europe than in the United States. European countries have made great strides recycling bottles through a deposit system. Vogel maintained that the deposit system is applicable for hazardous as well as solid waste. Deposits should include waste management and treatment costs. The deposit system incorporates a "polluter (consumer) pays" philosophy by imposing a fee on those individuals who neglect to return materials for deposit. A deposit on batteries sold in Denmark has succeeded in keeping the hazardous constituents in batteries out of the municipal solid waste stream.

Vogel stated that it is not necessary for direct revenues to exceed the costs of operating a recycling program in order for recycling HHW to be cost-effective. This is because the saved costs of waste management and disposal must be added to the revenue side of the operation in order to measure the full return from the recycling investment.

Vogel presented slides highlighting Austria's permanent household waste collection facilities which receive both solid and hazardous materials, including batteries and fluorescent light bulbs that contain mercury.

WASTE EXCHANGES AND TELEPHONE HOTLINES

Ned Brooks, Pollution Control Specialist, Hazardous Waste Division, Minnesota Pollution Control Agency (MPCA), St. Paul, MN.

HHW collection programs can be supplemented and even replaced through education and waste reduction programs. Paint, which represents a large percentage of the materials received at HHW collection sites, is a reusable material with a viable market for recycling. The Minnesota experience with paint exchanges indicates that two-thirds to three-quarters of the paint brought to an exchange may be picked up for re-use. Two Minnesota communities, Kandiyohi and St. Cloud Counties, ran HHW collection programs within six months after a paint exchange. The amount of paint received at the HHW collection declined by 92 percent and 65 percent respectively when compared to previous collection days that were not preceded by a paint exchange.

The MPCA sponsors a telephone referral/advice line for residents. The hotline instructs callers on how to manage and/or dispose of hazardous household products. Most callers (78.3 percent) are told how their products such as solvents, paints, and gasoline can be re-used or recycled. Only 17.5 percent are instructed to hold materials (such as pesticides) for a HHW collection day. (See Figure 5.)

Figure 5

REDUCING DISPOSAL COSTS PER PARTICIPANT

$53.00	APPROXIMATE DISPOSAL COST PER PARTICIPANT AT TYPICAL ONE-DAY COLLECTION IN MINNESOTA
$40.94	COST PER PARTICIPANT IF 65% OF PAINT DIVERTED
$32.33	COST PER PARTICIPANT IF 65% OF PAINT AND 25% OF ALL OTHER WASTE DISPOSED THROUGH REUSE, RECYCLING AND HOME TREATMENT
$23.72	COST PER PARTICIPANT IF 65% OF PAINT AND 50% OF ALL OTHER WASTE DISPOSED THROUGH REUSE, RECYCLING AND HOME TREATMENT
$11.50	78.3% OF ALL WASTE DISPOSED THROUGH REUSE, RECYCLING AND HOME TREATMENT

NOTE: PAINT DISPOSAL AMOUNTS TO 35% OF DISPOSAL AT TYPICAL COLLECTION

SOURCE: Brooks, Minnesota Pollution Control Agency

Brooks stated that public education and waste exchange efforts can supplement and even replace HHW collection programs. Brooks provided data demonstrating how the cost/participant rate associated with HHW collections falls when recyclables such as paint are diverted from the collection days and recycled. (See Figure 5A.)

Figure 5A

DISPOSAL ADVICE FOR HHW CALLS 7/1/87 - 6/30/88

	PAINT	GAS/FUEL	SOLVENT	ACID	PEST.	MOTOR OIL	OTHER	TOTAL	%
Secure & Hold	17	8	29	5	208	1	20	288	17.5
Reuse/Recycle	281	90	92	12	55	142	15	787	47.8
Sever/landspread	1	-	4	14	1	-	67	87	5.3
Wrap & Trash	4	-	-	-	4	-	32	40	2.4
Evaporate/ Solidify	298	5	23	-	-	-	43	369	22.4
Mix w/ Oil	-	2	-	-	-	2	2	6	.4
Other	12	10	6	1	12	1	29	71	4.3
TOTAL	613	115	154	32	280	146	308	1648	100
%	37.2	7.0	9.3	1.9	17.0	8.9	18.7	100	

SOURCE: Brooks, Minnesota Pollution Control Agency

SESSION E: HOW TO RUN A COLLECTION PROGRAM

Leslie Lewis, Citizens' Participation Coordinator,
Connecticut Department of Environmental Protection, Hartford, CT.

Planning

Lewis stated that organizing and advance planning is essential -- six months lead time should be allowed to:

- Gather HHW information to demonstrate a need for your project.
- Contact and involve as many local community officials and groups as possible.
- Coordinate an initial meeting with the appropriate community groups. Identify steps which must be taken, including date and location, education methods, town approval and financing methods, and hiring a licensed hazardous waste firm.
- Identify state and local regulations.
- Involve the media.
- Follow-up meetings/work activities.

Selecting a Date and Location

Lewis advised HHW collection program sponsors to select a convenient date and location.

- A Saturday or Sunday in spring or fall is usually best.
- A location that is central, well known and allows sufficient space for safety is the objective. Municipally owned property is often advisable for legal reasons.
- A dumpster or large packer truck for the non-hazardous waste which comes in is needed.
- Shelter and sanitary facilities should be provided.

Public Education and Publicity

According to Lewis, public education and publicity are among the most important aspects of organizing a successful event. Education and publicity should begin as early as possible. She recommended that collection sponsors do the following:

- Explain to people why they should participate.
- In the weeks preceding the collection event, specifics on what to bring in and how to transport HHW safely are necessary.
- A newspaper coupon or a flyer which citizens return listing what they plan to bring can help anticipate the level of participation.

Financial Support

- Money is needed to pay the licensed firm for collecting, sorting, disposing of waste and for travel to and from the collection site.
- Other funds are needed for printed publicity materials and other expenses. Possible sources of funds are:
  - Municipal budgets
  - Civic groups
  - Businesses and industries
  - Grants
  - User Fees

Hiring a Licensed Hazardous Waste Management Firm (HHWF)

Lewis stated that it is important to select a competent, experienced, and licensed HHWF since they will know federal and state laws and will have a proven track record.

EDUCATION

Joan Dotson, CA League of Women Voters, Redlands, CA.

According to Dotson, education for a collection day must be planned well ahead of time (at least six months).

Funds are needed to underwrite the costs. Possible sources are:

- City, county, or state departments of health

- League of Women Voters

- Industry

Community information and education programs on HHW include:

- Flyers widely distributed throughout the community at schools, libraries, community centers, senior citizen centers, markets, drugstores, and other visible locations;

- Newspaper ads and news stories, public service announcements;

- A speakers' bureau.

Information and educational material should cover these questions:

- Why should citizens be concerned?
  - In California landfills are closing, and the effect of consumer products on air quality is a growing concern.

- What can citizens do?
  - Develop educational materials that enable citizens to read labels and demand better labeling on household products.
  - Develop materials that let citizens know alternative or safer products so that less HHW is generated.

Publicity is not a substitute for education, but is very important to HHW collection program success. Dotson referred participants to Session I. of the Conference in which these aspects were more fully addressed.

EDUCATION (INDUSTRY PERSPECTIVE)

Steve Drew, Communications Manager, Western Region, Chemical Waste Management, Newark, CA.

It is important for sponsors of programs to work closely with their contractor in planning publicity. Extensive experience with programs underscores the critical importance of early planning.

Drew said that elements of an education and publicity campaign should include:

- o Consistent information
- o Time line. It is great "stress control" to have a strategic plan in advance.
- o Ample lead time (to avoid problems such as extra charges for rush printing jobs).

Experienced contractors often have materials that they can provide for a campaign. Experienced contractors can also advise as to what has worked and what has not, so program sponsors can avoid some of the pitfalls other programs have encountered. The coordination of technical and educational efforts is important.

Drew added his thoughts on aspects raised by remarks of previous speakers. In regard to volunteers, he suggested that sponsors check with the waste contractor to be sure what role volunteers can play. Indemnification provisions in contracts may limit involvement of volunteers.

Traffic control, surveying participants, assisting with recycling, and providing hand-outs are some of the tasks that have been given to volunteers. As for publicity, the most effective publicity pieces are those which end up in people's hands, such as a utility bill insert, brochure, or garbage can hanger. Press events with demonstrations of incompatibles such as the one done by Larry Sweetser at the conference are especially likely to get media attention.

EDUCATION MATERIALS DISPLAY

Ginger Lawrence, Research Associate, Dana Duxbury and Associates, Andover, MA.

Lawrence pointed out that materials for collection events must always include an explanation of what HHW is and why citizens should be concerned since there are still many people who are not aware of or concerned about the problem. Also, alternatives should always be listed so that good habits that reduce the need for collections can be instilled in homeowners. She went on to review the materials that were on display in the meeting room. Of particular note was the HHW Bibliography prepared for the conference and included in the conference packet. Most of the publications that she discussed are listed in it, such as Enterprise for Education's, "Hazardous Wastes from Homes", Alaska's HHW Audit forms, and school curricula.

Participants were encouraged to seek out conference speakers who had been involved with the preparation of materials for more detailed information.

The key point: there is no need to start from scratch. Stressing that you should always check with people whose materials or text you would like to use, Lawrence observed that in the world of HHW management it is generally permissible to copy others' information. Moderator Cass Goldwater and speaker Leslie Lewis both supported the view that as long as permission is sought and attribution given, you will find people are more than willing to have you use their materials.

SESSION F: FUNDING

STATE SPONSORED PROGRAM, FLORIDA

Jan Kleman, Environmental Specialist, Florida Department of Environmental Resources (DER), Hazardous Waste Management Section, Tallahassee, FL.

The Florida DER funded a three-and-a-half-year Amnesty Days program for HHW collection in 1983. During six phases of the program, over 12,000 participants brought in over 1.5 million pounds of hazardous waste at a cost of over $2.8 million. The program was established with funds from Florida's $11 million Water Quality Assurance Trust Fund.

After the Amnesty Days Program was completed, the state initiated its Local Hazardous Waste Collection Grants Program in the spring of 1987. Under the Grants Program, seven counties each received a $50,000 grant requiring them to:

- construct a safe, secure collection center;
- enter into a contract with a licensed transporter;
- hold at least two advertised free HHW collections annually for a two year period;
- offer at least two days per year when conditionally exempt generators can bring their hazardous wastes to the center to obtain a reduced rate for proper disposal.

State general revenue provided the initial $500,000 funding for the Collection Center Grants Program. The state funds only cover the initial fixed costs for the collection centers. Operating costs are covered by the counties through budget line items, permit fees on small quantity hazardous waste generators, tipping fees, and county taxes.

In June of 1988, the Florida Legislature reauthorized both Amnesty Days and the Local Hazardous Waste Collection Center Grants Program. For three years, annual funding for Amnesty Days will be $2 million and annual funding for the Collection Center Grants Program will be $1 million. Funding for both programs will come from the Water Quality Assurance Trust Fund. As the Trust Fund is depleted, it is replenished from funds raised through taxes on lead acid batteries, solvents, motor oil, and other selected products. Kleman said that there is hope that counties will get into the habit of running HHW collections, and support a network of locally operated and funded ongoing hazardous waste collection programs established within the next few years.

STATE PERMIT FEE, IOWA

Stuart Schmitz, Environmental Specialist, Iowa Department of Natural Resources, Des Moines, IA.

The state HHW program in Iowa was initially set up through the Groundwater Protection Act of 1987. The law requires mandatory shelf labeling by retailers that sell hazardous household products. Retailers who must comply with the law are identified by the Standard Industrial Classification (SIC) code under which they are categorized. Originally the legislation contained a graduated permit fee ($10 to $100) based upon the amount of household hazardous products sold by a retail establishment, but an across-the-board fee of $25 per retailer was later established to raise more money and to facilitate administration of the law.

The permits require regulated retailers to affix a shelf label sticker adjacent to the price information, designating that the items are hazardous household products. Informational posters are to be displayed close to the shelves where products are for sale. The posters explain the significance of the shelf label, the relationship of improper disposal of household hazardous materials to groundwater contamination, and direct consumers to additional informational brochures available at the establishment. The brochures provide more detail about the hazards, disposal options, and some alternative uses.

Approximately 10,000 retail establishments (approximately 11 percent) in Iowa currently have a household hazardous materials permit. The revenue generated from the permit program is used to fund Toxic Cleanup Days throughout the state (three during the fall of 1988).

MULTIPLE LOCAL GOVERNMENT AGENCIES, SEATTLE

Richard Conlin, Projects Director, Metrocenter YMCA, Seattle, King County, WA.

The YMCA programs in King County began before a complete list of funding sources were identified. The Metrocenter YMCA ran its first HHW collection program after it was awarded a small grant for this purpose from the Seattle solid waste authority. Due to program popularity, the King County Council began sponsoring and funding future programs. Conlin said that the key to securing funding sources was to ask for money, demonstrate program success, and ask for money again. Funds have been raised for Metrocenter YMCA collections from:

- a cigarette tax
- some of the revenue from a Department of Ecology tax of .008 percent on all hazardous materials sold within the state
- a Metro water quality fund
- monies from a county solid waste fund
- the general funds of cities
- in-kind contributions from cities, districts, and corporations.

The Metrocenter program also makes significant use of volunteers. A corps of trained fire fighters are responsible for much of the supervision, but volunteers such as chemistry graduate students and corporate volunteers do much of the actual work on site. Conlin concluded that it is ultimately important to secure a stable funding base, and that resourcefulness is necessary to get local programs started.

INDUSTRY FUNDING, MIDLAND, MI

James Conner, Dow Chemical U.S.A, Midland, MI.

James Conner described how Dow Chemical has provided funding and support for HHW collections. Initially, Dow provided services for HHW collection in Midland Michigan that included:

- providing trained people to collect, package, and prepare HHW for transport/disposal
- publicity
- waste hauling
- disposal/incineration.

Conner noted that Dow currently provides support through a partnership approach. This new approach includes:

- working with the League of Women Voters, local environmental and sports clubs, and other community groups,

- o working with the state (Clean Michigan Fund) which supports unique environmental projects,
- o supplying experience, transportation/disposal assistance, and training for HHW collections.

SOLID WASTE TIPPING FEE, SAN FRANCISCO

Joseph Johnson, Solid Waste Program Manager, City and County of San Francisco, CA.

San Francisco's efforts in the area of HHW management began with a successful one day collection event held in August 1985. On January 21, 1988, the City and its disposal contractor, Sanitary Fill Company, opened a pilot permanent Household Hazardous Waste Collection Facility (HHWCF) after obtaining a state variance (with limitations) from TSD facility permit requirements. The collection facility is open three days per week. Sanitary Fill runs the day-to-day operations, trains personnel, and ensures regulatory compliance. The City provides public education, signs the manifests, selects haulers, and arranges for disposal, inspects the facility, and analyzes data generated by the facility.

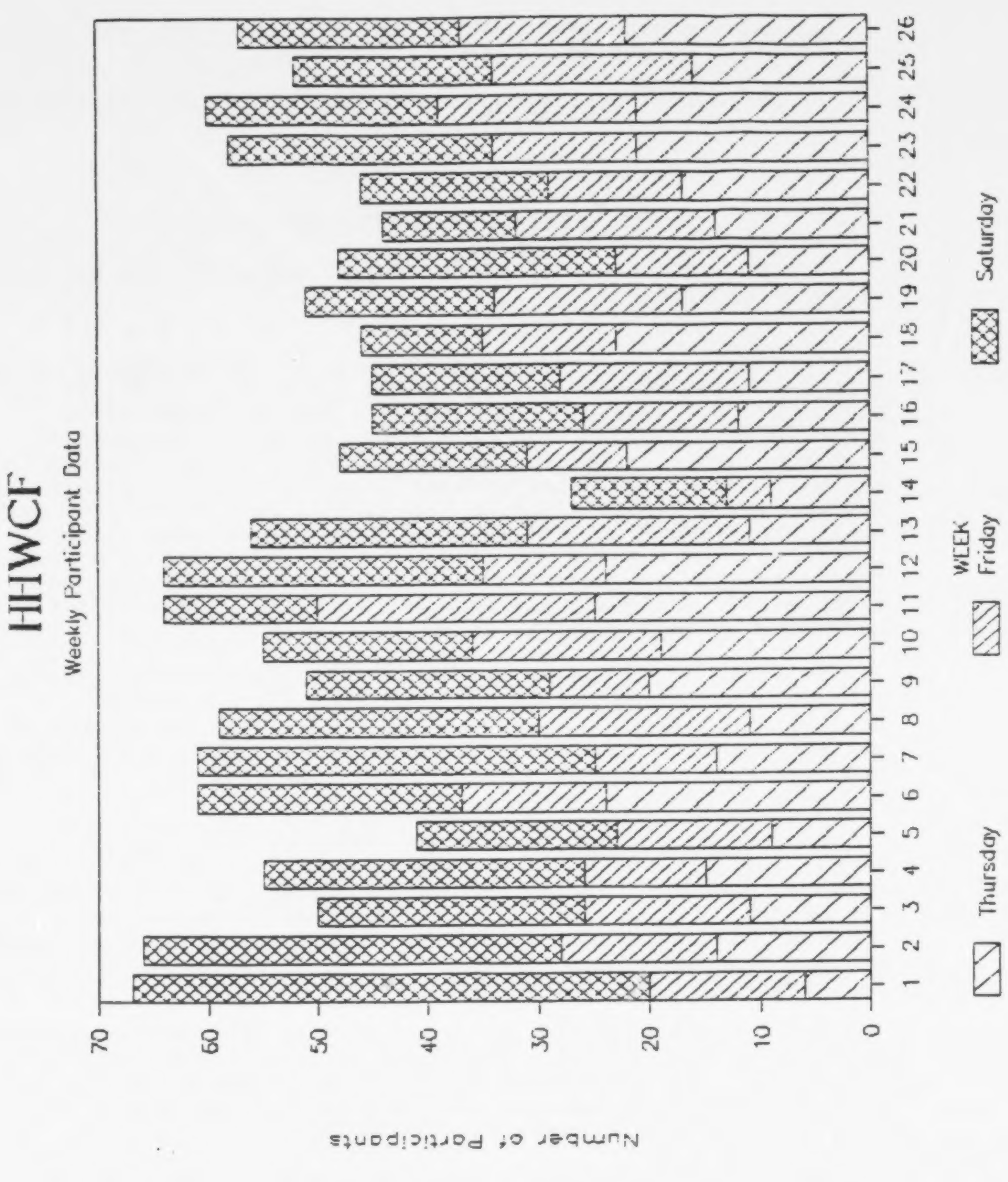
The collection center attracted 1,377 participants during the first six months of operation. (See Figure 6 for weekly participation data.) Paint made up the largest percentage of waste brought to the facility, at 55 percent. Waste oil was the second largest item, at 27.4 percent. Solvents were the third largest item, at 8.4 percent. (See Figure 6A.)

Sanitary Fill Company recycles motor oil, car batteries, anti-freeze and solvents that are received at the site. 2,000 gallons of waste oil were removed for recycling during the first six months. 300 gallons of water-based paint were donated to various organizations. Sanitary Fill recycles approximately 80 percent of all waste received at the facility, according to Sanitary Fill representative Larry Sweetser.

The program is funded by rates set for residential garbage services in San Francisco by the Refuse Collection and Disposal Rate Board. The Department of Public Works has authority to make rate adjustment recommendations. When increases occur, they are usually triggered by requests from waste contractors.

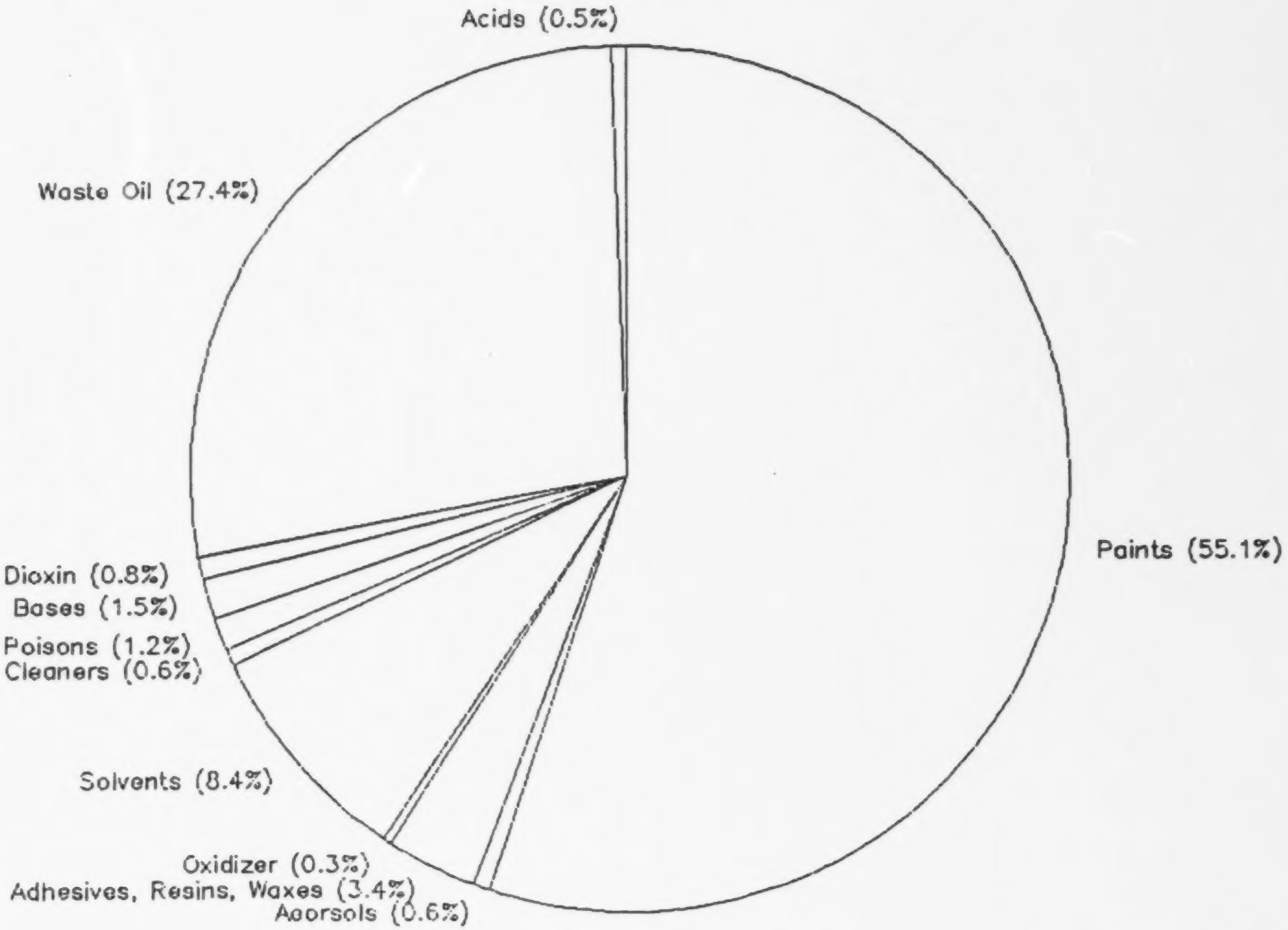
Sanitary Fill Company's total expenses for the first six months of operation of the facility were $309,175. (See Figure 6B.) In the future, these costs are expected to be

Figure 6



SOURCE: Johnson. City and County of San Francisco

Figure 6A



DISTRIBUTION OF WASTE BY CATEGORY

Based On Actual Gallons of Waste

SOURCE: Johnson, City and County of San Francisco

Figure 6B

HOUSEHOLD HAZARDOUS WASTE FACILITY
SEPTEMBER 30, 1988

EXPENSE ANALYSIS	SIX MONTH ACTUAL	SIX MONTH PROFORMA	% PROFORMA
Wages, Benefits, & Taxes	$ 89,108	$ 67,000	24.81%
Operating Supplies	59,868	45,000	24.83%
Disposal	64,602	60,000	7.12%
Insurance	10,000	10,000	0.00%
Professional Services (1)	21,048	9,500	54.87%
Fixtures	0	10,000	0.00%
Other	17,728	11,000	37.95%
Net Expenses	$262,354	$212,500	19.00%
Depreciation	$ 46,821	$ 49,000	-4.65%
Total Expenses	$309,175	$261,500	15.42%

(1) One time cost

SOURCE: Johnson, City and County of San Francisco

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approximately 15 percent lower. Reasons for lower costs include expectation of more vigorous recycling, treatment, and consolidation efforts. Furthermore, a large part of the programs' costs (13 to 16 percent) is the amortization of the HHWCF structure over a five year period. After this debt is retired, it is anticipated that program costs will drop by an additional $100,000 per year.

A total amount of $51,243 has been spent by the City, including $10,112 on public education services and printing. The total cost of the collection facility by both the City and Sanitary Fill is $360,418. This breaks down to approximately $222 per participating household and $1.09 per household in San Francisco. (See Figure 6C.)

Recommendations for future programs at the HHWCF include the consideration of satellite collection facilities throughout the City, expanded public relations efforts, efforts to reduce disposal costs, and exploration of the possibility of Small Quantity Generator use of the HHWCF.

Figure 6C

HOUSEHOLD HAZARDOUS WASTE COLLECTION FACILITY

FIRST 6 MONTHS

- Disposal Costs

- Manifested Waste	9,814 gallons	$7.34/gallon
- Paint (Waterbased)	300 gallons	$2.00/gallon
- Oil	2,000 gallons	Free

o Total Cost Per Participant	$ 2.22
o Total Cost Per Household	$ 1.09

SOURCE: Johnson, City and County of San Francisco

SESSION G: PERMANENT PROGRAMS

OVERVIEW OF PERMANENT PROGRAMS

Diane Christensen, Environmental Health Specialist, San Bernardino County Health Department, San Bernardino, CA.

Christensen noted that the permanent program offers a long-term solution to the problem of improper HHW disposal and provides the resident with at least weekly or twice monthly collection, whereas the short-term solution of a one-day collection will at least succeed in increasing public awareness. A HHW program may employ a combination of both types of collections to meet the varying needs of a county or city.

Differences may occur in the way a state permits a one-day collection versus a permanent program. In California, one-day collections are usually granted a simple variance. This variance may only allow collection and storage of wastes for disposal at a site for a period of time not to exceed 24 hours; will require specific safety equipment on site; and will require a certificate of insurance to be filed from the generator. For a permanent collection site, either a more comprehensive variance or a treatment, storage and disposal (TSD) permit must be applied for. The TSD permit allows a longer storage period for a permanent site than the "one-day" variance and may allow simple treatment such as acid/base neutralization or paint and solvent consolidation for recycling. There are also requirements for stringent safety equipment, information about geology of the area (e.g., earthquake faults and flood plains), proximity to residential dwellings, and proof of insurance or bond.

Site selection should consider convenience and safety for the community served, as well as the potential volume of waste to be handled and stored. Suggested sites include: landfill, solid waste transfer station, fire station, local agriculture office, TSD facility.

Factors affecting the cost of a permanent program include: labor and facility costs; distance to the TSD or recycling facility; costs for recycling or disposal; volume of wastes being handled. Larger volumes may command a better price break. Aggressive recycling of materials, such as bulked and reprocessed latex paints that are sold, can reduce other costs.

Funding sources vary and, depending on the state, may come through legislation or through local governmental mechanisms. In Florida, the legislature passed the Water Quality Assurance Act, establishing a trust fund, a small portion of which is used for HHW collection programs. In Kansas and New Hampshire, state superfund monies have been used for HHW efforts. California has funded many programs through local surcharges on the refuse collection bills or through increased local solid waste tipping fees per ton of waste going into county or city landfills. Businesses have funded or subsidized programs by donating funds or in-kind services. A final source of funding is the user fee or donation collected at collection stations. In any case, permanent funding is imperative to establishing a permanent collection program.

Christensen pointed out some disadvantages and advantages experienced with permanent programs. Disadvantages have been: keeping publicity lively; monitoring after-hours drop off at the fire station; resolving the ongoing liability issues.

Advantages are many. Establishing a permanent program and institutionalizing it supports the educational effort toward proper waste management. Also, a community may realize a reduction of costs and recovery of resources due to recycling efforts made available by an ongoing collection center.

Christensen described some specific types of permanent collection programs. For example: restricting the collection to one type of waste (used motor oil in Palo Alto); curbside collection (in Milpitas); door-to-door (in San Diego); networking to exchange or give away a product (Stored Waste Abatement Project - SWAP); and the permanent education program.

A list prepared by Dana Duxbury & Associates of the twenty-seven permanent collection programs currently operating in the U.S. appears in Appendix XIII.

CASE STUDIES: SAN FRANCISCO

Tom Watkins, Environmental Compliance Specialist, HHW Program, Sanitary Fill Company, San Francisco, CA.

On January 21, 1988, the City and its disposal contractor, Sanitary Fill Company, opened a pilot permanent Household Hazardous Waste Collection Facility (HHWCF) after obtaining a state variance (with limitations) from TSD facility permit requirements. The long range plans for the facility are the completion of the Part A and B application for a full permit that would allow the facility to accept small quantity generator hazardous waste as well as HHW.

Under the first permit variance in 1987, only HHW could be accepted. In addition, the program was to be a one-year pilot project, no treatment of HHW could be done on site, no storage was allowed for greater than ninety days, the storage limit was 40 drums, the city was required to conduct monthly inspections, and several wastes were prohibited from the facility such as radioactives and compressed gases. Any HHW brought in on "off hours" was to be stored appropriately.

In July 1988, a second variance was granted which allowed greater storage capacity, limited on-site treatment (bulking of household solvents and oil based paints), and acceptance of a limited number of compressed gas cylinders.

The concept of the facility came about because Sanitary Fill Company and the city were trying to develop a waste acceptance control program that was designed to monitor municipal waste delivered to the San Francisco transfer station. The facility also helps the city meet obligations under California law which require a county hazardous waste management program.

Some of the design features of the building include separate containment areas for incompatible waste streams, such as for storing oxidizing acids and acids. The building has double containment to prevent spill releases into the environment. Ventilation is provided to reduce exposure to toxic fumes. Sanitary Fill has designed an emergency response program and provided emergency response equipment such as eye washes and fire extinguishers. Wet chemistry analysis testing is done to identify unknown wastes.

The collection facility is open three days per week. Sanitary Fill runs the day-to-day operations, trains personnel, and ensures regulatory compliance. The city provides public education, signs the manifests, selects haulers, arranges for disposal, inspects the facility, and analyzes data generated by the facility.

The collection center attracted 1,377 participants during the first six months of operation. Paint made up the largest percentage of waste brought to the facility, at 55 percent. Waste oil was the second largest item, at 27.4 percent. Solvents were the third largest item, at 8.4 percent. Sanitary Fill Company recycles motor oil, car batteries, anti-freeze and solvents that are received at the site. 2,000 gallons of waste oil were removed for recycling during the first six months. 300 gallons of water based paint was donated to various organizations. Sanitary Fill recycles approximately 80 percent of all waste received at the facility, according to Sanitary Fill representative Larry Sweetser.

CASE STUDIES: MARTHA'S VINEYARD

Kate Gage, Program Coordinator/Planner, Martha's Vineyard Refuse Disposal District, Martha's Vineyard, MA.

Martha's Vineyard is a small island, 21 miles long, off the coast of Massachusetts. It has a year-round population of approximately 12,000 people, a sole source aquifer, and six landfills.

The island had its first collection in 1985, and its pilot permanent program began in August of 1988 after several trial runs in 1987. The collection facility is a stationary trailer with a capacity of 48 drums.

The trailer is equipped with an alarm system and three fire extinguishers although there are no spark generating devices in the trailer. Collections are held twice per month in the summer and once per month the rest of the year. Technical assistance, training, and disposal services are provided by a private contractor, Northeast Solvents. Wastes that are not accepted by the contractor are stored or home treated by residents based on instructions provided at the collection center.

Wastes are separated into categories. Welded steel drip pans are used in the process of segregating incompatible wastes. Vermiculite is kept on site for lab packing wastes.

Paint is bulked on site with a system designed by Northeast Solvents. A polyethylene tarp covers the ground, including the ground underneath the cars that pull in, to protect against spills of all types of hazardous waste.

Waste oil is collected at a separate station. Residents are charged two dollars per gallon, or have the option to participate in oil collection "milk runs" that are provided by the Refuse District.

Volunteers from the League of Women Voters manage traffic control and distribute surveys. The program has benefited from numerous volunteer services.

The surveys distributed at the facility provide information about the percentages of wastes brought by participants. Total cost of the program has been $36,000, thus far. $28,000 of the cost was for disposal. When collections were first conducted in 1985, the participation rate was roughly two percent. During the past year, cumulative participation rates for new participants is approximately eight percent.

Gage offered the following program recommendations:

- End-of-pipe disposal solutions are very expensive and do not address consumer behavior changes which are necessary to ultimately reduce the necessity for collections.

- The focus of the program should be expanded to address risk assessment and source reduction strategies aimed at consumers, town government, state legislators, and industry.

- The state regulatory agency should work with communities by not requiring hazardous waste management requirements, but by supporting and assisting local efforts.

CASE STUDIES: MICHIGAN'S PROGRAMS

Bob Ceru, Supervisor, Toxic Materials and Hazardous Waste, Ingham County Health Department, Lansing, MI.

Eight counties in Michigan have operated on-going HHW collection programs. Dow Chemical Company set up programs in three of these counties. The first county in Michigan to operate a permanent collection program was Ingham County in 1986. The other permanent programs are operated in a manner similar to the Ingham County program. Collection is primarily by appointment only. Collections are conducted once to twice per month in the summer and once per month the rest of the year at seven of the eight county collection centers. The Macomb County program operates five days per week in a permanent building.

When residents call for an appointment, staff members spend ten to fifteen minutes talking to the caller in order to identify materials that will be brought in and to provide packaging and transportation instructions. Reminders are mailed out to callers one week before the appointment date. Ceru maintained that collections by appointment are an important safety feature for residents, reduces the amount of waste brought into the collection, promotes recycling, is an educational tool, and enables adequate preparation by staff. He has even made site visits for homes where there were chemicals of particular concern, such as chlordane.

At the Ingham County site, an officer from the county Sheriff's Department and the Emergency Coordinator for the County are present. Staff remove materials from the cars and do initial sorting and waste identification. A hazardous waste contractor manifests the waste, assumes generator status, and transports the waste to a TSD where it is co-mingled, packaged, and removed, usually for incineration.

CASE STUDIES: ANCHORAGE'S PROGRAM

Glenn Akins, Environmental Consultant, America-North, Inc., Anchorage, Alaska.

Four years of planning, workshops, bond issues, design planning and implementation are coming to a close as Anchorage is about ready to open its permanent HHW collection facility. In 1983, an 11-member Mayor's Hazardous Waste Task Force was formed. The Task Force conducted a two-year planning effort, which included inventory of wastes generated in the community, extensive public involvement, and review of potential solutions. In September of 1986, the Anchorage Hazardous Waste Plan was completed. The plan included a provision for a hazardous waste collection and storage facility (Collection Center).

The Collection/Storage Facility is a 6,000 square foot building located on approximately one acre of land at the entry to the Anchorage Municipal Landfill. The Center includes five large and five small separated storage bays, an office, a lab, a staging/packing room, a truck loading dock, and equipment storage rooms. The Center is a pre-engineered metal frame building with concrete foundations, sealed concrete floor slabs, spill collection sumps within individual storage bays, fire suppression and alarm systems, and necessary utilities. The Collection Center will accept wastes only from households and conditionally-exempt small quantity generators.

A drop-off station for household wastes will be located at the Municipal Solid Waste Transfer Station, in mid-town Anchorage. The station will be attended by solid waste "spotters" trained to deal with household waste-drop off. A "milk-run" pickup service will also be provided. Pick-up service will be on a scheduled, or on a call-in basis, depending on the demand. This program will be offered on a pilot basis.

A private contractor was selected to manage the Anchorage facilities. Operator responsibilities include:

- o Accepting and properly handling HHW and conditionally exempt SQG waste. The contractor must assure that regulated wastes are not accepted.
- o Provide all equipment for day to day operations.
- o Perform analyses necessary to characterize wastes.
- o Manifest wastes for shipping (the municipality signs off as the generator).
- o Arrange for transport and disposal at a licensed TSD.

- o Conduct inspections and carry out maintenance in accordance with RCRA requirements.

- o Provide training for employees in accordance with OSHA (Occupational Safety and Health Act) regulations.

- o Collect fees from conditionally exempt SQGs and maintain financial records.

EPA Region X has determined the Collection Center does not require a RCRA Part B permit, provided that only non-regulated wastes are received at the facility. The construction of the facility was provided through a state matching grant and by general obligation bonds.

The capital costs for the center are as follows:

Administrative Expenses:	$ 10,000
Engineering Design:	$ 187,000
Construction Management:	$ 80,000
Hazardous Waste Collection Center	$1,023,000
HHW Dropoff Center:	$ 50,000
Contingency:	$ 50,000
Total Cost:	$1,400,000

The Plan recommended a combination of user fees and utility rate surcharges to pay for operation and maintenance costs, and a fee for conditionally exempt SQGs. The only charge for households will be the current five dollar entry fee for using any solid waste service. A surcharge was placed on sewer and garbage rates to provide operating funds.

PERMANENT EDUCATION PROGRAM

Mary Catherwood, Environmental Consultant, Kandiyohi County, Willmar, MN.

Catherwood discussed important elements of a permanent HHW education program and highlighted the work of the Kandiyohi County permanent education program. The County is a rural, agricultural region of Minnesota.

Catherwood noted distinctions between permanent education programs and those that surround a one-time event:

- o Permanent education programs must keep people's interest over the "long haul"

- It is much harder to attract media interest in a permanent program, therefore, media events must be incorporated into the program

- Permanent education programs must become more sophisticated over time to keep up with the knowledge and interests of the targeted communities.

The goals of the Kandiyohi program are to define and identify HHW, to raise public awareness of the problem, and to change people's behavior.

Catherwood said that it is not necessary to go into detail and explain what specific products are hazardous or not since it is not that important if a collection day attracts some products that are not HHW. In a permanent program, however, it is important to teach those people what is hazardous so they do not dutifully bring the same non-hazardous wastes to each collection day.

Catherwood said that promoting changes in behavior is one of the more difficult goals of the program. It is important to teach people what HHW is and why it is a problem, but it is also important to change people's behavior.

Catherwood discussed the following tactics that worked well for the Kandiyohi permanent education program:

- Working within existing networks in the community, such as the League of Women Voters and ministerial associations.

- Creating a steady stream of media events, such as a press conference and tour of the collection facility.

- Recruiting allies in the community who then posted notices, distributed information, and staffed a paint exchange.

- Making use of regular community events. For example, displays were established at the county fair and the annual health fair.

SESSION H: PROGRAM MANAGEMENT

Total Integrated HHW Management Program

David Galvin, Senior Water Quality Planner, Seattle Metro Water Resources, Seattle, WA.

In Galvin's view, a comprehensive program should address HHW management, not just collection and disposal. This is more than a bureaucratic distinction. It requires looking at reducing the generation of wastes, reuse and recycling, special handling for unique or priority waste types, and other actions beyond collecting all HHW, packing it into drums, and shipping them out of state to be "disposed."

Second, said Galvin, a comprehensive program should be ongoing, not restricted to one or two days a year. Single day events are fine for raising awareness, but not for servicing those that missed the event.

Galvin noted that a third component of a comprehensive program should be to address all waste streams and related issues. While predominantly a solid waste concern, HHW is not exclusively a solid waste concern; it is also an issue for wastewater treatment, storm drain contamination, worker safety, citizen health and safety, fire prevention, and promotion of environmental stewardship.

Galvin recommended the following ten elements (not in any particular order of importance) as essential for a comprehensive HHW management program:

- Public awareness efforts to raise the levels of knowledge and interest in the HHW issue as something important to worry about;

- Waste reduction and minimization emphasis to reduce as much as possible the generation of waste that has to be specially handled; efforts could include promotion of safe alternative products, promotion of proper product use, promotion of using up, reuse, use by others and waste exchange, home treatment of certain wastes and changes in product labeling and packaging;

- Waste collection of those wastes that cannot be reduced; collection should be ongoing as well as (or in place of) single-day events and could include permanent drop-off sites, mobile sites, multi-day events; door-to-door or curbside pickup, and provision for return to retail outlets;

- Priority waste handling once collected; wastes should be handled or managed following a hierarchy of preferred methods that promote reuse and recycling and that minimize disposal via landfills;

- Waste exclusion and enforcement provisions to keep hazardous wastes out of the municipal waste streams and the environment; efforts could include bans or restrictions on improper disposal with appropriate fines, monitoring to catch violators and to encourage compliance (such as solid waste load checking), and teeth in local enforcement;

- Targeting of selected wastes. Targeted wastes might include high risk, high volume and/or easily recycled wastes like motor oil, batteries, paints, and pesticides;

- Public education emphasis to promote waste reduction, raise awareness, change behaviors, advertise services and otherwise get the public to support and participate actively in the program; efforts should include a central telephone line for information and diverse activities aimed at reaching the general public, targeted segments of the public (such as do-it-yourselfers) and schools;

- Dedicated financing to operate the whole program on an ongoing basis, ideally separate from the whims of the general fund; financing could come from local utility rates (solid waste tipping fees and sewer rates), special product or hazardous substance tax, or state cost-sharing from superfund, water quality or other special revenue sources;

- Evaluation and revision mechanisms to ensure that the program is dynamic and flexible but also that sufficient documentation and data are gathered to allow for rational, supportable change over time;

- Communication/coordination/cooperation among all interested and affected entities; everyone in the local program area should be working together to enhance the common plan; this includes state regulators, local agencies such as public works, solid waste and sewer utilities, health departments, agricultural commissioners, poison centers, fire department, private businesses, licensed treatment, storage and disposal (TSD) facilities, manufacturers, retailers, community and environmental groups.

Galvin maintained that the overall goal of a HHW management program should be to protect public health and the environment from adverse effects resulting from improper handling and disposal of HHW. He recommended that specific goals or objectives of a program should include:

- o Fostering an ethic of personal responsibility for wastehandling decisions

- o Promoting waste reduction over collection/disposal

- o Effecting a significant reduction in improper handling and disposal of HHW by reducing the amount of input of HHW to municipal waste streams and the environment by significant, measurable degrees.

LOCAL PLANNING: CALIFORNIA

Judy Orttung, Technical Consultant, San Bernardino County Health Department, San Bernardino, CA.

Orttung reviewed the requirements and provisions of California's Tanner Act (A.B. 2948). This act addresses the issue of hazardous waste management planning. County level planning is part of the larger statewide planning effort. As a consequence of the legislation, passed in September 1986, all 58 counties in California have developed or are developing comprehensive hazardous waste management plans.

One of the eight elements mandated for the comprehensive plans is consideration of the needs of small businesses and households. For many counties, this has resulted in first-time interest in the HHW issue. Awareness of HHW and its management has helped to educate the public on the broader topic of hazardous waste.

The rest of Orttung's presentation addressed some of the difficulties encountered in developing a comprehensive plan. Development of the plan within the proscribed schedule was one problem. Good data on past waste generation and identification was difficult to obtain. An outcome of the process has been a major data base management system for tracking and identifying wastes.

LOCAL PLANNING - WASHINGTON STATE

William P. Green, Solid and Hazardous Waste Program, Washington State Department of Ecology, Olympia, WA.

The planning process in Washington State for hazardous waste by local governments began in 1985 with the amending of the state's Hazardous Waste Management Act of 1976. This action came as a result of work in solid waste planning, and a characteristic of the Washington system is its similarity to solid waste planning. Since the first appropriation in 1987 for grants to local governments, the work has snowballed. It is foreseeable that by the deadline of June 30, 1990, there will be plans for all 39 counties. (See Figure 7 for an example of a plan alternative.)

Green noted that there is tremendous diversity found in the State of Washington. Thus, a program had to be designed to address these differences.

One example of this diversity has to do with costs. Costs range from about 47 cents per capita to almost ten times that amount ($4.38). There is also a range of waste needing management: from an estimated 18,000 tons per annum (King County) to 10 tons (Garfield County). In all, planning costs are expected to be around $5 million for the three year period (1987 to 1990), with the state providing between $3.5 and $4 million. The current state assistance program include 75 percent grants through a recently enacted tax on poisons.

This can also be compared to the cost of implementation, estimated by King County, the state's largest county, to range from $3.5 to $4.7 million per year. In a more medium size area, Clark-Skamania, the cost is about $150,000 per year.

The plans themselves focus on what is termed "moderate-risk" waste, defined as hazardous wastes from households and from businesses not currently regulated by the Federal or State regulations due to the small size of their waste streams.
For households, the basis for planning is the Household Hazardous Substances List (commonly called the Washington List) -- "Planning Guidelines for Local Hazardous Waste Plans" WDOE 87 - 18, pages 21-25.

The Planning Process

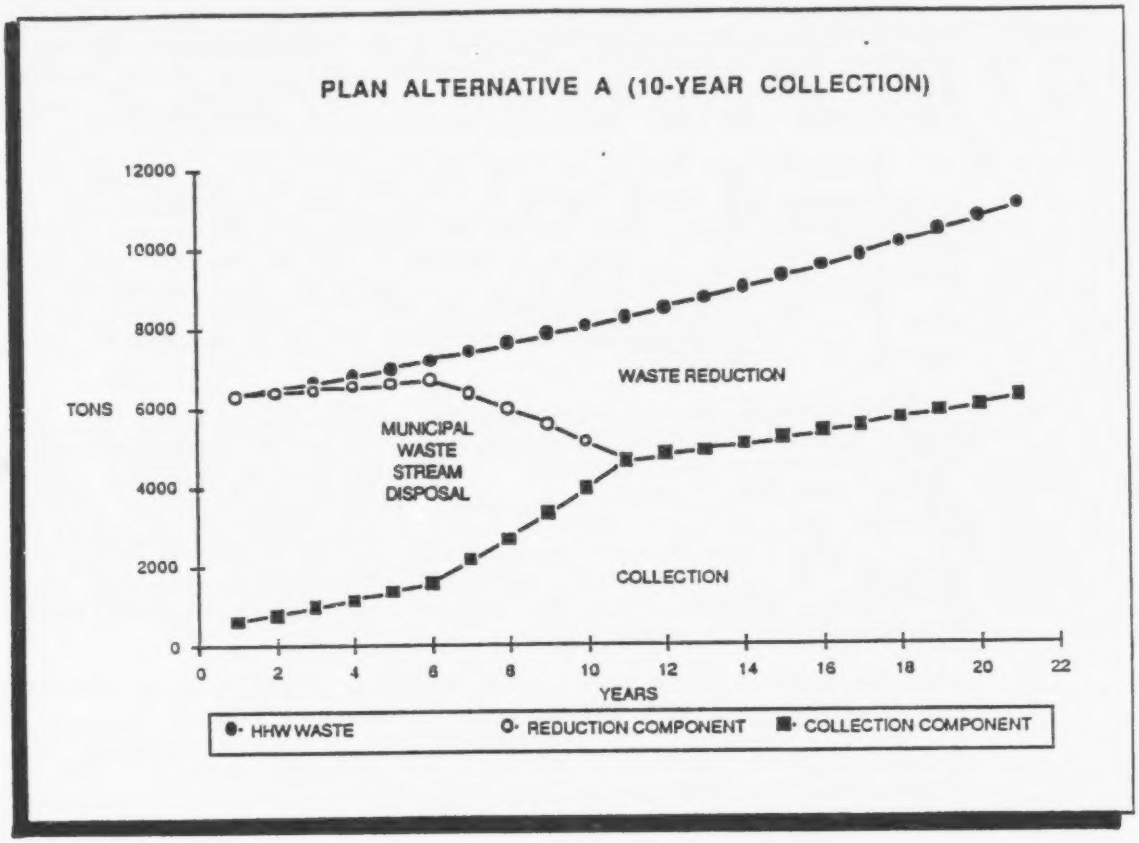
Green said that the planning process itself can be described in the following steps: organization, public participation, data gathering and evaluation, plan of action, adoption and approval, and implementation.

Organization entails internal actions by the agency including grants negotiation, negotiation of inter-jurisdictional agreements for joint plans, as well as consultant and committee selection.

A key process that begins immediately after the organization is the establishment of the public participation process. The purpose of this process is to provide education and to facilitate

Figure 7

Plan Alternative A



ALTERNATIVE A: OPTIMUM PROGRAM

- Includes all program elements at the maximum amount.
- Household Program = 100% diversion in 10 years.
- SQG Program = 100% diversion in 20 years.
- Total Cost (over 20 years) = $157 million.

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SOURCE: Green, Washington State Department of Ecology

Waste Reduction
Recycling
Physical, Chemical, and Biological Treatment
Incineration
Solidification/Stabilization
Landfill

The subsequent plans have three components as a minimum:

Education and Business Technical Assistance
A System for Waste Collection
Establishment of Local Enforcement Agency

Green concluded by stating the King County projection/goal: by 2010 there will be no moderate-risk waste in the municipal waste stream. That goal implies managing a waste stream which currently produces 18,000 tons per year of hazardous waste.

COMPREHENSIVE PROGRAMS -- BABYLON

Evan Liblit, Commissioner, Department of Environmental Control, North Babylon, Long Island, NY.

The Long Island metropolitan area is comprised of a total of 13 townships (three in Nassau County and ten in Suffolk), several of which currently claim to have fully integrated waste management programs. After generations of relying almost exclusively on landfilling, a number of these towns have broken from the rest of the pack by planning and developing comprehensive waste management programs and committing the resources to make them work.

Owing to the region's sole source aquifer status and the area's relatively high level of sophistication with regard to environmental issues, Liblit said that Long Island has been perhaps the nation's most active region for collecting HHW and removing them from the daily waste stream. Twelve of the 13 towns have hosted collection days during 1988, with a total of at least 75 such events being held among the towns since 1985. One town has established a permanent collection center and others plan to follow.

The New York State Department of Environmental Conservation's S.T.O.P. (Stop Throwing Out Pollutants) program has encouraged the towns to identify and collect household hazardous materials as a means of further protecting the groundwater. Limited financial assistance has been provided by the DEC, but so far its spiritual support has been of far more value to the region.

during the period of early November through Christmas each year. Until recently, nearly all leaves were brought to the landfill. However, the Highway Department began composting leaves last year at a five-acre site in the northern end of the town. This accommodates approximately 5,000 cubic yards, or some 1,000 tons of bagged leaves, and equates to about 0.6 percent of the town's waste stream over the pilot period.

During the 1988 leaf season, the town will continue to utilize the Highway Department site and will conduct another limited scale program across town at the unused portion of a cemetery. It is anticipated that these combined pilot scale efforts will reduce the overall waste stream by some 2 percent over the six-week leaf collection period.

Household Hazardous Wastes

Two household hazardous waste collection days were sponsored by the town during October 1988. They were the first ever held in Babylon and were responsible for diverting the equivalent of 53 55-gallon drums of hazardous materials from the landfill. In addition, 20 car batteries were collected and recycled, as was a large quantity of used oil. The town's 1989 operating budget provides funding for a total of four collection days -- two in spring, two in fall.

Conclusion

Babylon has gone to great expense to set in place a fully integrated solid waste management program. Construction of the two ashfills, closure of the existing landfill by the end of 1990, remediation of groundwater pollution related to the landfill, clearing and construction of a five-acre site for a bypass landfill, and funding for a municipal recycling facility which will cost $50 to $60 million by 1993. The town believes that a well-balanced integrated solid waste program provides the best solution to the solid waste management problem.

COMPREHENSIVE PROGRAMS: MINNESOTA

Susan Ridgley, Environmental Planner, Solid and Hazardous Waste Program, WA Department of Ecology, Olympia, WA. (Note: until November 1988, Susan Ridgley was with the Minnesota Pollution Control Agency, St. Paul, MN.)

Minnesota has a statewide HHW program, which began as a pilot program in the fall of 1985. This initial effort was funded by a legislative commission. The objective was to determine the generated irregularly (banned pesticides) or less hazardous wastes, generated continuously (paint).

- Assist citizens to reduce the amount of waste generated.

Education

- General audience materials
- Telephone advice hotline
- School programs (learning stations for use in classroom)
- Packets for local officials

Collections:

- One-Day
    - 10 collections in FY '88 (July 1 to June 30). There will be 14 collections in FY '89
    - Costs are split 50/50
    - MPCA provides generator number, technical assistance, training programs, most of the equipment, access to contractors, generic publicity materials
    - Local organizers provide management team, site and insurance coverage, volunteers, publicity
    - Recycling/reuse opportunities, and local solid waste disposal
- Satellite Facility (Permanent Collection Site)
    - Education and collection take place at a location in the community. Three are currently operational and one more is planned for operation by the end of FY '89.

Future Plans

- Budget increase to approximately $1.2 million -- objective to increase satellite facilities to a total of ten located around the state by 1993
- Improved waste reduction and education efforts

SESSION I: HOW TO RUN A COLLECTION PROGRAM

FUNDING AND COSTS

Dana Duxbury, Dana Duxbury & Associates, Andover, MA.

A variety of funding sources have been used to fund the over 1300 HHW collection programs which have been held across the country. These sources include:

- o Federal funds from the EPA regional offices. These have mainly come from the RCRA 8001 grants which are no longer available.
- o State funding from the appropriations budget, bonding, State Superfund monies, or matching funds
- o Regional funding from counties, regional planning agencies
- o Local level funding from the health, public works, wastewater, fire department, and other budgets. (Seattle had 14 different agency budgets.)
- o Corporate support, including full funding, partial funding, payments for printing or design work, and donated services or expertise
- o Funds from individuals, donated in small amounts ($5) to cover costs of the program
- o Taxes on specific products (See Iowa).

Many programs have used a combination of sources and often had additional donated resources. All programs must eventually institutionalize the funding sources to ensure a continued, predictable collection program.

Costs

The total cost of a program usually is determined by the quantity of waste brought into the program. Thus, Seattle's spring 1988 program, which attracted over 6,000 participants and over 250 tons, cost approximately $500,000. Therefore, the total amount budgeted for a program is determined by the maximum number of anticipated participants.

Total program costs have varied greatly due to the nature of the community and the extent and quality of education and o Multiply each percent by the total number of drums to determine the likely number of drums per waste type.

o Some wastes are likely to be reused or recycled. Determine the likely number of drums of each waste that will be reused or sent directly to be recycled -- possibly paint, used oil, car batteries or solvents -- and at what cost per drum.

o For the remaining wastes, determine which will be sent to be treated (incinerated or neutralized), the equivalent number of drums, and the cost per drum. Also determine the types, equivalent number of drums, and the cost per drum of the waste which will be sent to be sent to be disposed of in a hazardous waste landfill.

o Multiply the number of drums for each option by the average cost per drum.

o Determine the size of your education and publicity budgets.

o Add a few thousand dollars for set-up and personnel costs.

o By adding your likely waste management, set-up, personnel, education and publicity costs, you can determine a fairly good estimate of what your program will cost.

o Have a contingency plan developed if many more homeowners come than you anticipated, since more waste means much higher waste management costs.

HEALTH AND SAFETY

Larry Sweetser, Environmental Compliance Program Manager, Norcal Solid Waste Systems, Inc., San Francisco, CA.

Sweetser identified the key components to address when planning the waste handling operation for a HHW collection site. According to Sweetser, successful projects depend upon preparation for the unexpected. By learning from the experience of others, communities can have contingency plans in place. He warns, however, that it is impossible to plan for all problems, especially because of the intense nature of a collection day.

PREPLANNING

Sweetser recommended that sponsors consider the following preplanning guidelines:

A. General Considerations

- o Identify the entity accepting status as hazardous waste generator.
- o Identify the project coordinator.
- o Assemble a project team (sponsors, management, hauler) to develop the project.
- o Contact the disposal site to ensure ability to accept all collected wastes.
- o Determine if any recycling is going to occur: this can greatly affect the flow of waste and safety issues at the site.

B. Permitting Considerations

- o Obtain approvals from all relevant state and local agencies.
- o Adhere to an operation plan.
- o Design flexibility into the plan to adjust to situations that arise during the collection day.

C. Public Education/Notification Considerations

- o Stress safe packaging and recommended transport.
- o Indicate wastes accepted and excluded from the project.
- o Provide instructions for participants prior to arrival at the site.
- o Provide a telephone number for additional information.

D. Site Location Considerations

- o Accessibility/familiarity to target area participants
- o Access from main roads
- o Nonobstruction with existing traffic flows
- o Considerations for traffic at the site

- -- excess traffic handling
  - -- worker parking
  - -- entrance area and egress
  - -- waste receiving lanes

- o Available resources
  - -- impervious surface
  - -- storm drains, wells, streams
  - -- communications: telephone, radio
  - -- sanitary/decontamination facilities
  - -- shelter from inclement weather
  - -- power supplies
  - -- lighting

- o Insurance

E. Site Personnel Considerations

Many people will be needed. Specific jobs must be assigned.

- o Volunteer vs. hired staff
- o Identification of personnel in authority
- o Numbers of workers
- o Qualifications
- o Responsibilities
- o Training
- o Information packet

F. Equipment Considerations

- o Checklist of equipment (from drums to pencils)
- o Contingency plan for getting forgotten or additional supplies, especially since many projects are on weekends
- o Identify sources
- o Arrange for arrival at the site

G. Waste Handling Considerations

- o Flow of waste on the site

- Excluded waste contingencies
- Non-resident participation
- Acceptance of waste from businesses or non-profit groups
- Disposal of non-hazardous waste
- Establish recycling procedure, if applicable

H. Emergency Response Procedures

- Pre-notification of local agencies
- Established procedures
- Designation of on-scene coordinator
- Training of site personnel
- On-site assistance vs. on call: health department, hazmat vehicle, police, fire, bomb squad

I. General Health and Safety Issues

- Personal protection
  - -- availability
  - -- required items such as protective glasses
  - -- enforcement
- Relief area: for breaks, lunch

J. Post Project

- Site cleanup
- Excess material removal
- Extended waste storage contingency
- Project review with coordinators

THE COLLECTION DAY

Sweetser recommended that sponsors consider the following items for on-site waste handling operations during the collection day:

A. General Set-up

- Arrival of personnel

o Final instructions to personnel

o Restricted areas

o Media area

o Traffic flow -- provide directions to the site and on-site controls such as signs and cones.

o Opening time -- be prepared for early arrivals. Do not begin the event with a back-up of cars.

B. Entrance Area

o Well identified with markers such as signs and balloons

o Personnel -- police officer or other designated person should be present to control traffic as it enters the site.

o Waste pre-screening

o Distribution of literature/questionnaires/surveys

o Participant verification -- make sure only resident households and other targeted participants are admitted.

C. Receiving Area

o Traffic flow

o Personnel
    --responsibilities
    --qualifications

D. Sorting Area

o Identification of waste into hazard classification -- be sure to ask homeowners for information before they leave the site.

o Personnel
    --authority
    --responsibilities
    --qualifications

E. Packaging Area

o Verification of waste classification

- Personnel
- Liability

F. Waste Loading Area

- Non-interference with traffic
- Close to packaging area

G. Vehicle Exit

- Coordinators
- Traffic Flow

H. Special Waste Area

- Haz-cat: identification of unknowns
- Paint consolidation
- Waste oil
- Designated site for especially dangerous waste such as dioxin, explosives, pentachlorophenol

I. Equipment Storage

- Accessible
- Non-obstructive

POST-PROJECT

A. Finalization of recordkeeping

- Manifest
- Variances

B. Critique

- by personnel
- by sponsors

C. Identification of preventative measures

D. Determination of future plans

E. Notes of appreciation sent to

- all personnel
- all involved organizations

DEMONSTRATION OF BULK VS. LAB PACKING

LeeAnn Merashoff, Field Services Coordinator, Northeast Solvents, North Andover, MA.

A demonstration of the ways in which wastes are packaged by a contractor at a collection day was provided by Merashoff.

Lab Packing

Lab packing involves packing household products in the original containers into a 55-gallon drum. Items of the same hazard class and chemical compatibility are packed together with absorbent materials.

Fiber drums may be used for items destined for incinerators. Later, at a central transfer location (owned by the contractor) the wastes are poured out of the containers and the resulting mixtures are treated or sent for incineration if they are subject to land ban regulations. Trained chemists prepare the manifests which accompany the wastes from "cradle-to-grave." About 21 gallon containers can be packed in a 55-gallon drum.

Bulking

Bulking occurs if a waste product can be poured out of an individual container and combined with another waste product(s). In this manner, it is possible to get 55 gallons of waste into a 55-gallon drum. Since some wastes, such as paint, are very commonly received at collection days, consolidation or bulking helps to reduce the total number of drums and thus, the total costs.

Merashoff's company has developed a simple metal device to remove paint from a can. The device sits atop a drum. Two T-shaped bars, with the top of the T the same width as either a pint or a gallon can, are attached to the frame. These allow the can to be swirled around upside down, scraping out the paint.

SITE SELECTION

Michael Borden, President, Safety Specialists, Santa Clara, CA.

Borden highlighted specific considerations important for site selection. These considerations are as follows:

- Accessibility -- is it isolated, or easy to find?
- Well-known location -- will people know the site?
- Low-volume traffic -- will children be playing nearby or will there be a lot of people?
- Security -- an overwhelming participation response may require a second shift, after dark, or even over into the next day, so security for overnight supervision of materials, a locked fence or even better, a security guard may be necessary.
- Facilities -- lights may be needed if work is done after sunset (especially fall programs).
- Impervious ground -- cement or black top are best. Gravel or dirt is not recommended. Most locations are covered with plastic to collect spills. It is difficult to work on such a surface if it is over gravel or dirt.
- Sewers or drains -- barriers can be used to cover them if a location is otherwise ideal, but it is a consideration that has to be kept in mind. Big trouble will ensue if spills get into groundwater.
- Communication lines -- phone must be available for emergencies.
- Shelter -- contractors can provide a tent, however, some locations can have permanent structures in the event of inclement weather.

SITE DESIGN

Contractors can help collection organizers to select the best site for their collection program. Site design is tied into traffic control and the receiving end for HHW. A "drive-through" style program has two goals which are to get cars through as quickly and as safely as possible. Normally, a group of receiving lines are set up.

Provisions should be made for overflow parking. With a lot of used oil coming in, many participants want to keep the emptied containers. Overflow parking is helpful when people need to have a place to wait while the oil is consolidated. Space needs to be set aside for participants that do not adhere to a five gallon, 50 pound limit since unloading the materials is time consuming. An oil or paint express line can be set up since 40 to 50 percent of waste received by Chemical Waste Management has been used motor oil or paint.

Safety Specialists, Inc. concludes that early planning for the site location and design is a very important joint task for organizers, technical people, and contractors.

SESSION J: PESTICIDES - FARM AND HOME

OVERVIEW OF ISSUES

Gina Purin, Norcal Solid Waste Systems, Inc., San Francisco, CA. (Note: Until November 1988, Gina Purin was with Hazard Evaluation System and Information Service, California Department of Health Services, Berkeley, CA.)

Purin noted some of the problems and issues associated with pesticide management and/or disposal. Problems include:

- incomplete disposal information on labels
- label warnings that warn users of acute, but not chronic effects associated with pesticide products
- lack of alternatives for managing banned products
- the need to educate retailers and applicators on safe pesticide management and disposal
- labels that do not include adequately specific information (what does "ventilated area" or "protective clothing" mean?)
- pesticides are not readily available in small quantities for consumers who do not need to buy in bulk
- incomplete toxicity data/health studies.

FIFRA

Robert Denny, Office of Pesticide Programs, U.S. EPA, Washington, D.C.

There are risks associated with the transport, storage, use and disposal of pesticides. In Denny's view, the disposal problems facing users, regulators, and private industry cannot be solved by just one regulatory agency. Complex, interrelated situations, such as pesticide disposal issues, will need the combined efforts of EPA, USDA, the states, researchers, registrants and the user community to effectively reduce pesticide disposal risks.

Denny noted the following problems:

o FIFRA and RCRA are not consistent in regard to how pesticides should be managed.

o Labels are not adequate -- for example, the label instructions to wrap household waste pesticides in a newspaper and discard in the trash must be changed.

o Many jurisdictions still do not know how to operate a disposal (HHW collection) program or cannot finance this relatively high cost method of disposal.

o There are few viable disposal programs (Maine and Illinois are exceptions) for farmers, small commercial application firms, and small retailers.

o Suspended and cancelled products pose management difficulties.

Denny's recommendations include:

o revising FIFRA Part 165 formulation disposal regulations into functionally equivalent requirements in RCRA and incorporating these requirements onto enforceable pesticide product labels until FIFRA Section 12 is amended;

o requiring under Part 158 that registrants develop data on the best available disposal methods/techniques for their new and existing pesticide products and incorporating this information on product labels;

o developing a comprehensive public outreach program on proper disposal to reach all users;

o developing an applicator certification and training module on pesticide disposal and waste minimization;

o analyzing state and local disposal programs and encouraging adaptive uses;

o amending FIFRA to make the pesticide industry, not EPA, responsible for disposal;

o giving EPA authority to order recall, storage, transportation and disposal of suspended and cancelled pesticides;

o giving EPA authority to inspect facilities storing pesticides.

COLLECTIONS

Susan Ridgley, Environmental Planner, Solid and Hazardous Waste Program, WA Department of Ecology, Olympia, WA. (Note: until November 1988, Susan Ridgley was with the Minnesota Pollution Control Agency, St. Paul, MN.)

Ridgley reported that 70 percent of pesticide use is for agricultural purposes; 16 percent for industrial, commercial, or government use; and 14 percent for home and garden use. National surveys reveal that 90.7 percent of the households in the nation use pesticides. At Minnesota collection days, the average participant brings in .5 gallons of pesticides. The ten pesticides received most frequently by Minnesota HHW collection days are all either banned or cancelled pesticides. DDT is the most frequently received pesticide.

The MPCA is currently working on a Waste Pesticide Collection study that focuses on agricultural pesticides. Goals and objectives are to collect and properly dispose of waste pesticides from the agricultural community, to inform and educate the public, and to determine current management methods and the nature/extent of the problem.

The MPCA has embarked on a two-phase approach. The first phase focuses on a survey to farmers, dealers, and users/applicators. Those surveyed were asked who they thought should pay for pesticide disposal and to provide information regarding what types and quantities of pesticide wastes they have accumulated.

The second phase focuses on collection projects designed to enable the MPCA to experiment with different types of programs. The following types of programs were held in Minnesota:

- A door-to-door pick up by appointment collection resulted in a 25 percent participation rate, and approximately five gallons of pesticide waste per participant.

- A program held at a fixed collection center charged a small fee based on quantity. It resulted in four percent participation rate with an average of 18 gallons per participant.

- A program held at a fixed collection center charged participants 50 percent of the cost of disposal. It resulted in a three percent participation rate and seven gallons per participant.

o A program held at a fixed site in a small county charged no fee for participation. It resulted in a 31 percent participation rate and 11 gallons per participant.

o A program held at a fixed site in a large county charged no participation fee. It resulted in a 14 percent participation rate and yielded ten gallons per participant.

MPCA is expected to embark on a four-year clean sweep program to collect and manage the remaining banned, cancelled, or suspended pesticides that make up 15 percent of the pesticide waste in the state. A research program will study disposal options for the remaining percent.

OTHER MANAGEMENT OPTIONS

Jay Feldman, National Coordinator, National Coalition Against the Misuse of Pesticides, Washington, D.C.

Feldman said that a discussion about pesticides should not be based upon the assumption that toxic materials, such as pesticides, are beneficial to society. Rather, those who would like to market toxic materials should prove to society that the introduction of a toxic material into homes, food, ground and drinking water, and air has no alternative, less or non-toxic approaches.

The government sets standards of acceptable risks. Feldman maintained that the standards are not based upon multiple exposures of many chemicals or upon additive risks, and that EPA has no standards based on numbers, accepted protocol, and accepted scientific practices.

Feldman recommended an integrated pest management (IPM) approach for reducing the risks associated with pesticide production, use, transport and disposal. The Congressional Office of Technology Assessment, in a 1980 special report, said that an IPM approach for major U.S. crops can reduce pesticide use up to 75 percent, reduce preharvest pest-caused losses by 50 percent, and reduce the total pest control costs by a significant amount.

The IPM program for street trees in the City of Berkeley, CA reduced pesticide use by over 90 percent and saved the city $22,500 compared to the pre-IPM program. The National Park Service applied IPM methods to its more than 90 million acres of urban and rural facilities. Between 1980 and 1983, a 70 percent reduction in pesticide use was achieved. Most of the remaining pesticide use involved "least-toxic" compounds such as insecticidal soaps, biologicals, and repellents.

SESSION K: COMPONENTS OF AN HHWM EDUCATION PROGRAM

INTEGRATED PROGRAM

Sondra Goodman, Director, HHW Project at S.W. Missouri State University, Springfield, MO.

Since 1986, the Missouri DER has been allocated $100,000 to conduct pilot HHW collection programs. The S.W. Missouri State University HHW Project sponsors an educational program that is designed to supplement state efforts. The program is not intended to advocate that people not buy certain products, rather it is designed to help people to identify risks, make informed decisions, and to use, store, and dispose of products safely. The program also promotes waste exchange and recycling, and a Telephone Information Request line is operated to answer citizens' questions and concerns.

Educational efforts can produce results. After a local expert reported that one mercury watch battery per six tons of municipal trash exceeds the RCRA solid waste limit for mercury, the HHW Project directed an educational effort aimed at jewelry and hearing aid stores. Thus far, 18 stores have agreed to collect batteries. The batteries are then sold to a mercury refining company that was identified by the HHW Project. The stores keep the profit from the sales.

The HHW Project also promotes the use of nitrile gloves as a superior alternative to latex gloves. Several large Missouri supermarkets have agreed to stock nitrile gloves if they get requests from consumers.

Goodman recommended educating the public at various times throughout the year. For example, education in regard to safe disposal and alternative products might be provided in the fall and spring when people are cleaning out their homes. The Christmas season might be an appropriate time to educate the public about consumer products such as perfumes that are bought for the holidays.

Some of the components of an education program may include:

- defining issues
- learning from many community experts such as the Poison Control Center, Red Cross, health officials, and conservation commissions
- building a resource library

- teaching people the meaning of symbol words on labels ("Danger" means a few drops can be fatal, "warning" means a tablespoon to an ounce may be fatal)

- teaching people about categories of hazardous products such as paints/solvents, cleaners, pesticides, and automotive products, before trying to address individual products

- publishing a recycling list

- establishing a local telephone information request line

- compiling information about alternatives to specific products (the state of California published a "List of Approved Art and Craft Materials Acceptable for Kindergarten and Grades 1-6" which can be obtained from the California State Department of Education, Dr. Bill Honig, Capital Mall, P.O. Box 944272, Sacramento, CA 94244-2720)

Goodman added that due to typically limited funding and staffing, it is important to identify and gain the support of key leadership in targeted communities to assist the program, since they can supplement the efforts of the program organizers.

Goodman concluded by making a distinction between information and education. Education goes beyond the provision of information because it produces behavioral effects, which is what the HHW Project is designed to achieve.

COLLECTION PROGRAMS

Joan Dotson, League of Women Voters of California, Redlands, CA.

San Bernardino County, California and the League of Women Voters believe that HHW is an important topic for inclusion in elementary school curricula. Therefore, the county hired a staff person to develop a technical packet for teachers and a ten-minute video appropriate for 3rd-6th graders. The video highlights dangers of using household chemicals and benefits of properly disposing of hazardous household products. The educational efforts are designed for students as well as their parents. It is hoped that students will share the information they learn with their parents and encourage them to safely use and dispose of hazardous household products.

After obtaining the support of the School Superintendent of

Instruction, three workshops were designed to assist the trainer/teacher for each school in incorporating HHW education into the school curricula. Three workshops were necessary to service the 55,000 square miles of San Bernardino County. In order to obtain the video that accompanies the teachers' packets, trainer/teachers were required to attend the workshop. Those that failed to attend received a follow-up letter from the County Environmental Health Services requesting an appointment. Workshops were held in October, 1988. The results of the workshops have not yet been evaluated.

The session concluded with a viewing of the ten-minute video. Contact Joan Dotson (see List of Speakers) for information about obtaining a copy of the video.

INDUSTRY PROGRAM

Elizabeth Garside, Ketchum Public Relations, contracted by the Household Products Disposal Council, Chemical Specialties Manufacturers Association (CSMA), Washington, D.C.

Industry has attempted to respond to concerns about environmental impacts of household products. CSMA began researching the concerns and knowledge of consumers in regard to household products and formed the Household Products Disposal Council in order to provide information to consumers.

The Council set up an information and referral service for community organizers, groups, and waste managers to provide information to concerned consumers. Guidelines were offered to communities that briefly explain how to design a community disposal program. A manual containing these guidelines was sent to community leaders and organizers and to state officials.

A pamphlet was prepared for distribution by communities and by the Corporate Distribution Program. The pamphlet offers "do's and don'ts" for disposing of household consumer products. Through the Corporate Program, member and non-member companies are encouraged to reprint the pamphlet and distribute it to communities and employees. The Uniroyal Company in Naugatuck, Connecticut distributed 10,000 copies to Naugatuck residents.

The Council uses the media to promote its work. National and local media publications are granted access to Council and local independent spokespeople. A quarterly mailing is sent to approximately 400 national news media that cover environmental and consumer issues. When possible, the Council tries to provide media with spokespeople and local contacts that can provide information about specific communities.

The Disposal Council worked with the National Conference of State Legislatures to develop a video tape and an issues briefing that provides information to legislators about issues, options, facts, and policies. The Council also advises legislators to call the Council if they need information regarding household product disposal.

Garside noted that the Council has received 2,000 phone calls from households and concluded that the public is interested in acquiring basic information regarding what they should be concerned about. Therefore, the Council is trying to provide information to as many people as it can reach.

HHW MANAGEMENT IN GERMANY

Joyce Rosenthal, Assistant Director, Council on the Environment for New York City, Mayor's Office, New York City, NY.

New York City, which dumps most of its 28,000 tons per day of municipal waste in a leaking Staten Island landfill, has been placing attention on HHW during the past two years. Last spring, Rosenthal spent one month in Germany studying HHW reduction and disposal. She developed a slide presentation designed to educate people about HHW management opportunities.

Germany is far ahead of NYC and most of the U.S. in managing HHW. Virtually every German city has a pilot or permanent collection program, and the national government has the authority to require these programs. On some occasions, small business waste is also collected at HHW collections.

German cities operate many permanent collections where HHW is collected along with non-hazardous recyclables. Permanent depots receive materials such as paints, fluorescent tubes (which contain mercury), and auto batteries. Approximately 10 to 20 percent of all batteries in Germany are collected. Berlin alone collected 200 tons in 1987, with 30 percent coming from special school collections. The Sanyo Corporation gives prizes to students who collect the most batteries.

Germany also has mobile collection units. A collection unit in one southwest German town operates door-to-door at a cost of approximately $175,000 per year. Stationary collections that are seasonal or temporary are also held in Germany.

Germany promotes source reduction by actively promoting environmentally benign products. "Blue angel" symbols are used to signify some of these products, and HHW collection trucks also display the blue angel. Some German companies have responded by producing less hazardous products. For example, a Union Carbide subsidiary introduced a new alkaline manganese battery that contains only .025 percent mercury instead of the typical one percent. Germany estimated in 1986 that one-half of the mercury in municipal incinerator emissions came from batteries.

Public education efforts are taken very seriously in German cities such as Munich and Hamburg. Municipal officials in these cities believe that outreach and educational efforts should begin intensively one to two years in advance of bringing a program on line. Educational programs include distributing brochures to everyone in the city, holding press conferences with the highest state and city officials, placing posters and information on trains and buses, and preparing almost daily press releases with detailed instruction during the one to two weeks preceding the event.

SESSION L: SCIENTIFIC INFORMATION

DATA

Linda Morse, Senior Environmental Planner, Brown, Vence & Associates, San Francisco, CA. (Morse presented a paper prepared by Kate Rassbach, also of Brown, Vence & Associates)

Annual Generation of HHW

In order to find better ways to manage HHW in the future, there is a need for accurate data on the generation rates of HHW. Most data, to date, has come from collection programs. These programs generally reflect storage rather than ongoing generation of HHW.

Three data sources were used in combination to more completely depict generation and disposal of HHW. They were: phone surveys of randomly selected households; pilot collection projects; and waste sorting studies. Used alone none of these study methods adequately depicts the HHW generation and disposal picture.

The trash sort gives quantities thrown out as well as a base line if future studies are done. Phone surveys can give a picture of all methods households use as well as changes in homeowners' awareness over time. Collection projects assess storage of HHW and citizens' participation. (See Figures 8-8C.)

A table showing the calculation of per-household generation of hazardous waste appears in Figure 8A. The total is 21.5 pounds per household per year. Calculated out nationally, 100 million tons of HHW is generated annually.

Implications

Even where collection programs are going on they do not capture a large percentage of the HHW. Two to five percent is the likely amount collected. Nevertheless, collection programs are extremely important. They collect HHW, even if it is an admittedly small percentage of the total HHW generated. They have great public education value.

Morse stressed that other approaches must be taken as well. Reduction at the source is one approach so that less HHW is generated. There needs to be an expanded focus of the actions being taken on the local, state and federal levels. Examples are

Figure 8

BROWN, VENCE & ASSOCIATES
Energy and Waste Management Engineers
San Francisco, California

Calculation of Annual Household Hazardous Waste Generation

	Hazardous Residues in Trash (lbs. per household)	Residues & Containers in Trash (lbs. per household)	Percent Discarded As Trash	Total Annual Generation (lbs. per household)
Waste Oil	1.17	1.36	31	4.38
Paint	2.30	6.35	75	8.47
Solvent, Varnish, Adhesives	0.77	1.02	81	1.26
Pesticides	0.30	0.42	88	0.47
Cleaners & Caustics	0.83	1.62	84	1.92
Batteries	1.73	1.73	94	1.84
Aerosols, Antifreeze, Polish	0.30	0.60	85	0.71
Cosmetics, Medicine	0.43	0.95	94	1.01
Other	0.95	1.31	94	1.40
TOTAL	**8.79**	**15.35**		**21.46**

SOURCE: Morse; Brown, Vence & Associates

Figure 8A

Table 1

CALCULATION OF PER-HOUSEHOLD GENERATION OF HAZARDOUS WASTES

		Household Hazardous Wastes in Solid Wastes: Sorting Studies									
		Marin	New Orleans	Puget Sound			Solid		Residues plus		Per Household
Generalized Waste Group[a]	Description	Residential Collection lb/Y	Residential Collection lb/Y	Residential Collection lb/Y	Self-Haul lb/Y	Total lb/Y	Waste Average lb/Y	Container Factor	Containers In Trash lb/Y	Percent Disposal As Trash	Annual Generation lb/Y
Waste Oil	Motor oil, other oil and grease	0.53	1.29	1.61	0.09	1.69	1.17	1.16	1.36	31	4.38
Paint and Dye Waste	Paint products	0.60	1.28	0.85	4.13	4.99	2.29				
	Ink, dye	N/A	N/A	0.02	0.01	0.04	0.01				
	Subtotal	0.60	1.28	0.88	4.15	5.02	2.30	2.76	6.35	75	8.47
Solvents	Solvent, fuel, varnish	0.26	0.20	0.07	0.85	0.92	0.46	1.40	0.64	75	0.86
	Adhesives	0.11	0.14	0.04	0.64	0.68	0.31	1.21	0.38	94	0.40
	Subtotal	0.37	0.34	0.11	1.49	1.60	0.77		1.02		1.26
Pesticdes	All	0.48	0.07	0.06	0.29	0.35	0.30	1.39	0.42	88	0.47
Nonmetallic Inorganic Liquids	Cleaners	0.78	0.71	0.74	0.18	0.92	0.80	1.95	1.56	84	1.86
	Drain opener, caustics, acids	0	0	0.03	0.05	0.08	0.03	1.94	0.05	94	0.06
	Subtotal	0.78	0.71	0.77	0.23	1.00	0.83		1.62		1.92
Inorganic Solid Waste	Batteries, electronic parts	1.71	0.81	0.89	1.79	2.68	1.73	1.00	1.73	94	1.84
Organic Liquids	Aerosols	0.04	0	0.08	0.07	0.15	0.06	2.09	0.13	94	0.14
	Antifreeze	0	0.10	0.06	0.00	0.06	0.05	1.59	0.08	60	0.14
	Auto, furniture, Other polish	0.21	0.21	0.06	0.08	0.14	0.19	2.03	0.38	88	0.43
	Subtotal	0.25	0.31	0.19	0.16	0.35	0.30		0.60		0.71
Organic Sludges and Solids	Cosmetics	0.24	0.34	0.25	0.04	0.28	0.29	2.46	0.71	94	0.75
	Medicines	0.21	0.07	0.13	0.01	0.15	0.14	1.72	0.24	94	0.26
	Subtotal	0.45	0.41	0.38	0.05	0.43	0.43		0.95		1.01
Other	Various	1.25	1.61	N/A	N/A	N/A	0.95	1.38	1.31	94	1.40
Total		6.42	6.83	4.88	8.25	13.13	8.79		15.35		21.46

(a) Groupings according to California Department of Health Services Guidelines for Preparation of Hazardous Waste Management Plans, 1987

N/A: Not included as category in study

Columns may not add to totals due to independent rounding.

SOURCE: Morse; Brown, Vence & Associates

Figure 8B

Table 2

PHONE SURVEY DATA: DISPOSAL METHODS USED FOR HOUSEHOLD HAZARDOUS WASTES

	Disposal Method (Percent of Households Using Method)						
Substance	Sewer	Trash	Ground	Street	Recycle	Storage	Other
Chemical drain opener	3	97	0	0	0	0	0
Paints/thinners	18	76	3	3	0	0	0
Motor oil	0	29	14	11	32	11	4
Wood preservatives	7	90	0	0	0	0	3
Pesticides	2	97	0	0	0	0	0
Herbicides	0	100	0	0	0	0	0
Gasoline/engine cleaner	9	91	0	0	0	0	0
Household cleaners	8	91	0	0	1	0	0
Auto/furniture polish	2	98	0	0	0	0	0
Antifreeze	6	94	0	0	0	0	0
Radiator flush	17	0	0	83	0	0	0
Other chemicals	6	94	0	0	0	0	0

Adapted from L. J. Russell and E. C. Meiorin, The Disposal of Hazardous Wastes by Small Quantity Generators: Magnitude of the Problem, Association of Bay Area Governments, 1985. Averaged from survey results in three communities.

SOURCE: Morse; Brown, Vence & Associates

Figure 8C

Table 3

GENERATED WASTE STREAM VERSUS COLLECTION PROGRAM WASTES: MAJOR WASTE TYPES

	Puget Sound Sorting Study:(a)		Generation Methodology:	Environmental Health Coalition Project:
	Residential Collection	Self-Haul	Total Waste Stream(b)	Collected Wastes(c)
Waste per Household	4.88 lb/Y	8.25 lb/Y	21.46 lb/Y	47 lb/Participant
Waste Categories				
Paint and paint products	18.0%	50.3%	39.5%	57%
Solvents, fuels, and waste oil	35.2%	19.1%	26.3%	17%
Cleaners	15.8%	2.8%	8.9%	4%
Pesticides	1.1%	3.6%	2.2%	8%

(a)Does not include containers or non-trash disposal

(b)Including containers and non-trash disposal

(c)Adopted from C. Walker and D. Takvorian, The World is Full of Toxic Waste; Your Home Shouldn't Be, Environmental Health Coalition, 1984.

SOURCE: Morse; Brown, Vence & Associates

COR:KATE-BUS 10/25/88

legally required labeling of hazardous materials so that consumers can be better educated about product purchases, and use restrictions on the sales of highly hazardous materials where safe substitutes exist. Both of these measures are aimed at reducing total quantities of HHW. The data confirms that solutions must be based on a broad approach to the problem.

SOLID WASTE COMPOSITION

Douglas Wilson, The Garbage Project, Department of Anthropology, University of Arizona, Tucson, AZ. (This talk was co-authored by Wilson and Dr. William Rathje, also of the University of Arizona.)

What are the characteristics of HHW?

What risks does HHW pose to human health and the environment?

These fundamental questions were the stimuli for a University of Arizona multi-disciplinary project to study hazardous materials in residential refuse (HHW). Since 1984 refuse from over 6,000 households in five different communities has been collected and analyzed by a team composed of archaeologists (including Wilson and Rathje), civil engineers, and microbiologists. Their immediate goal was to characterize the types, quantities, and concentrations of HHW. The ultimate goal was to analyze the risks associated with these materials.

Wilson briefly outlined their methods which included telephone interview surveys, collection day inventories, and direct waste sorting. He covered in detail what they had learned about composition. In fact, they believe that socioeconomic/waste relationships together with census statistics can produce useful estimates of HHW for communities without necessitating direct hands-on sorting of residential waste. (See Figures 9 - 9H.) Based on their data they made the following conclusions:

- While HHW is a relatively small proportion of the total residential solid waste analyzed (less than one percent), estimated rates of generation suggest that significant quantities of these wastes are discarded by communities each year.

- There is a great diversity of HHW types. Certain wastes, however, represent a major proportion of generic categories. Certain generic categories represent most of the total HHW by weight.

Figure 9

D.C. Wilson

November 3, 1988

TABLE 1
GARBAGE PROJECT HHW STUDIES

community	year	sample weight (kilograms)
STUDY COMMUNITIES		
Tucson, Arizona	1984-1988	17,057
Phoenix, Arizona	1988	14,777
Marin County, CA	1986	15,659
New Orleans, LA	1986	12,197
Total U.S. Sample		59,690
Mexico City	1987	3,971
STUDY LANDFILLS		
Chicago		
Greene Valley	1987	1,204
Mallard North	1988	NA[1]
San Francisco		
Durham Road	1987	537
Sunnyvale	1988	NA
Tucson		
Mullins	1987	762

---

[1] NA = not available. The data for Mallard North and Sunnyvale landfills are still being analyzed.

SOURCE: Wilson, University of Arizona

Figure 9A

D.C. Wilson

November 3, 1988

TABLE 2
HOUSEHOLD HAZARDOUS WASTE ESTIMATES BASED ON U.S. SAMPLE[1]

	COMMODITY/CONTAINER WASTES	
type	grams/household/year	percent
Household Cleaners	496	11.47%
Automotive Products	456	10.54%
Household Maintenance	1,583	36.61%
Yard Products	177	4.09%
Household Batteries	803	18.57%
Prescription Drugs	138	3.20%
Cosmetics	525	12.14%
Hobby/Other	146	3.38%
Total	4,325	100.00%

---

[1] Based on refuse samples collected in Marin County, California; New Orleans, Louisiana; Tucson, Arizona; and Phoenix, Arizona. New Orleans and Marin County data from Rathje et al. 1986.

SOURCE: Wilson, University of Arizona

Figure 9B

D.C. Wilson November 3, 1988

TABLE 3
DETAILED COMPOSITION DATA FOR HOUSEHOLD CLEANERS[1]

	COMMODITY + CONTAINER WASTES		
type	Weight grams	Percent	Percent Container
HOUSEHOLD CLEANERS			
toilet bowl cleaner	1,348	0.79%	34.50%
drain opener	474	0.28%	47.47%
detergent, laundry	532	0.31%	42.67%
bleach	262	0.15%	22.52%
detergent, dish	2,506	1.47%	50.76%
cleaner, all purpose	2,864	1.68%	34.92%
disinfectant	201	0.12%	77.61%
cleaner, glass	300	0.18%	37.67%
polish, metal and wood	832	0.49%	68.99%
polish, plastic	52	0.03%	57.69%
polish, shoe	382	0.22%	71.20%
other polish	82	0.05%	98.78%
floor polish and wax	63	0.04%	80.95%
carpet cleaner and deodorizer	764	0.45%	25.39%
air sanitizer/deodorizer	892	0.52%	48.21%
oven cleaner	664	0.39%	45.03%
other household	42	0.02%	92.86%
TOTAL	**12,260**	**7.19%**	**44.76%**

---

[1] Based on 31,834 Kilograms of refuse sampled from Tucson and Phoenix, Arizona. It is believed to represent 1,767 household's weekly solid wastes based on the number of pickups sampled and a factor to estimate those households that did not put out their refuse for collection in the sampling areas.

SOURCE: Wilson, University of Arizona

Figure 9C

D.C. Wilson November 3, 1988

TABLE 4
DETAILED COMPOSITION DATA FOR AUTOMOTIVE AND HOUSEHOLD MAINTENANCE ITEMS[1]

	COMMODITY + CONTAINER WASTES		
type	Weight grams	Percent	Percent Container
AUTOMOTIVE MAINTENANCE			
all purpose lubricating oil	350	0.21%	64.00%
brake/clutch/hydraulic fluid	811	0.48%	9.62%
motor oil	6,467	3.79%	24.82%
transmission fluid	3,062	1.80%	1.80%
oil and fuel additives	672	0.39%	53.57%
antifreeze	448	0.26%	60.71%
polish, automobile	899	0.53%	38.82%
de-greaser, general automobile	368	0.22%	27.45%
sealants, automobile	644	0.38%	40.68%
TOTAL	**13,721**	**8.04%**	**24.09%**
HOUSEHOLD MAINTENANCE			
non-latex paints	11,065	6.49%	40.04%
latex paints	36,128	21.18%	48.96%
turpentine	159	0.09%	78.62%
sealant, wood	730	0.43%	26.30%
stain	2,795	1.64%	52.20%
adhesive	1,659	0.97%	14.35%
sealant, general household	3,669	2.15%	37.01%
adhesive, special purpose	141	0.08%	73.05%
wood filler	571	0.33%	6.13%
other maintenance	430	0.25%	13.26%
TOTAL	**57,347**	**33.62%**	**44.79%**

---

[1] Based on 31,834 Kilograms of refuse sampled from Tucson and Phoenix, Arizona. It is believed to represent 1,767 household's weekly solid wastes based on the number of pickups sampled and a factor to estimate those households that did not put out their refuse for collection in the sampling areas.

SOURCE: Wilson, University of Arizona

Figure 9D

D.C. Wilson November 3, 1988

TABLE 5
DETAILED COMPOSITION DATA FOR YARD, BATTERIES, DRUGS, COSMETICS, AND OTHER ITEMS [1]

	COMMODITY + CONTAINER WASTES		
type	Weight grams	Percent	Percent Container
PESTICIDES AND YARD MAINTENANCE			
fertilizer	35	0.02%	8.57%
pesticides	2,519	1.48%	38.71%
herbicides	311	0.18%	34.73%
pet drugs, powders, and dips	243	0.14%	80.25%
TOTAL	**3,108**	**1.82%**	**41.22%**
HOUSEHOLD BATTERIES	26,294	15.42%	NA
AUTOMOBILE BATTERIES	37,603	22.05%	NA
PRESCRIPTION DRUGS	4,642	2.72%	47.31%
SELECTED COSMETICS			
perfume	916	0.54%	90.17%
nail polish remover	273	0.16%	57.14%
nail polish	1,474	0.86%	78.56%
antiperspirant/deodorant	1,084	0.64%	73.43%
cosmetics, face	3,747	2.20%	56.23%
cosmetics, hair	6,607	3.87%	45.48%
other cosmetics	550	0.32%	45.64%
TOTAL	**14,651**	**8.59%**	**56.64%**
OTHER			
hobby items	188	0.11%	96.28%
charcoal lighter fluid	158	0.09%	87.97%
pool chemicals	265	0.16%	95.09%
fuel refill	48	0.03%	20.83%
other	284	0.17%	16.20%

---

[1] Based on 31,834 Kilograms of refuse sampled from Tucson and Phoenix, Arizona. It is believed to represent 1,767 household's weekly solid wastes based on the number of pickups sampled and a factor to estimate those households that did not put out their refuse for collection in the sampling areas.

SOURCE: Wilson, University of Arizona

Figure 9E

D.C. Wilson

November 3, 1988

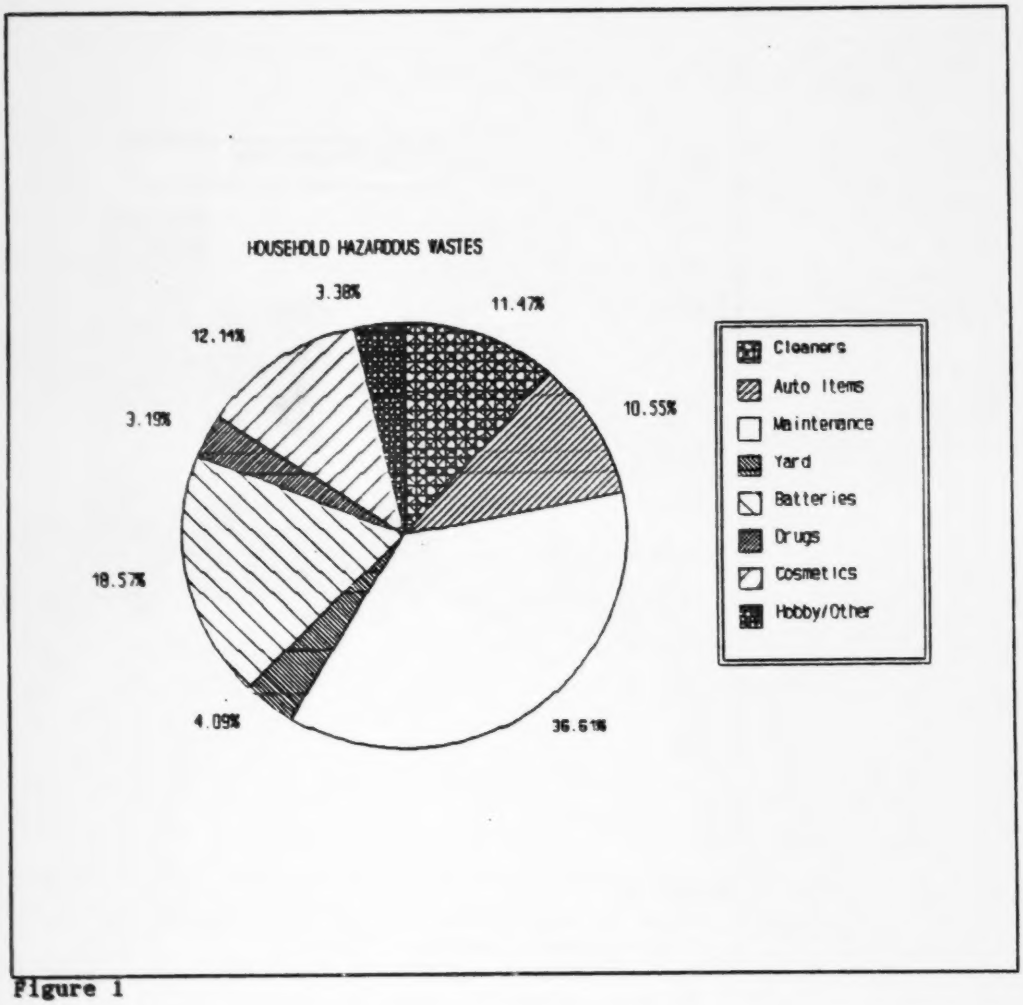


Figure 1

Note: based on the weight of commodity wastes only (no container weights included).

SOURCE: Wilson, University of Arizona

Figure 9F

D.C. Wilson **November 3, 1988**

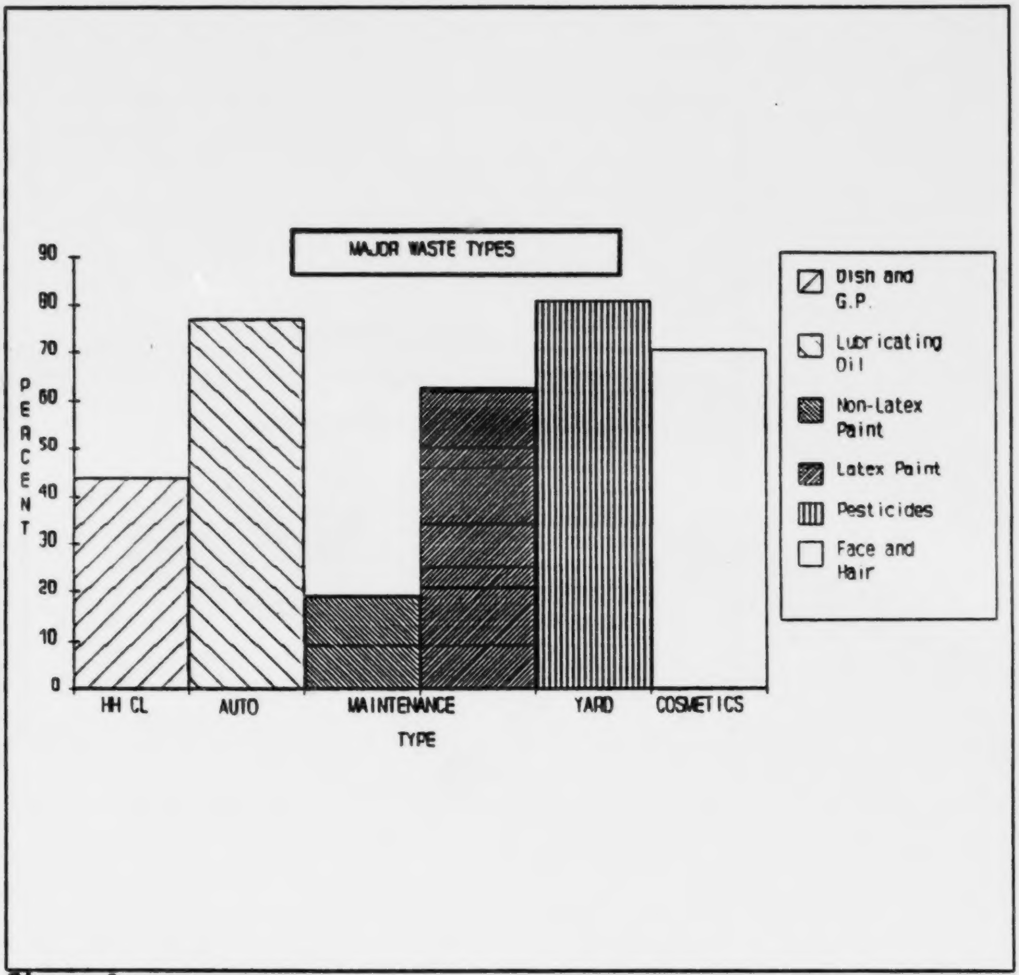


Figure 2

Notes: Based on the weight of commodity wastes and containers.
G.P. = general purpose cleaners.
Face and hair cosmetics include makeup base, home perm kits, and others.
HH CL = household cleaners category.
AUTO = automotive maintenance item category.
MAINTENANCE = household maintenance item category.
YARD = yard items category.
COSMETICS = selected cosmetics category.

Explanation: Each bar is the percentage by weight of a category that a specific item type(s) represents. Example: lubricating oil is nearly 80 percent of auto item wastes recorded.

SOURCE: Wilson, University of Arizona

Figure 9G

D.C. Wilson **November 3, 1988**

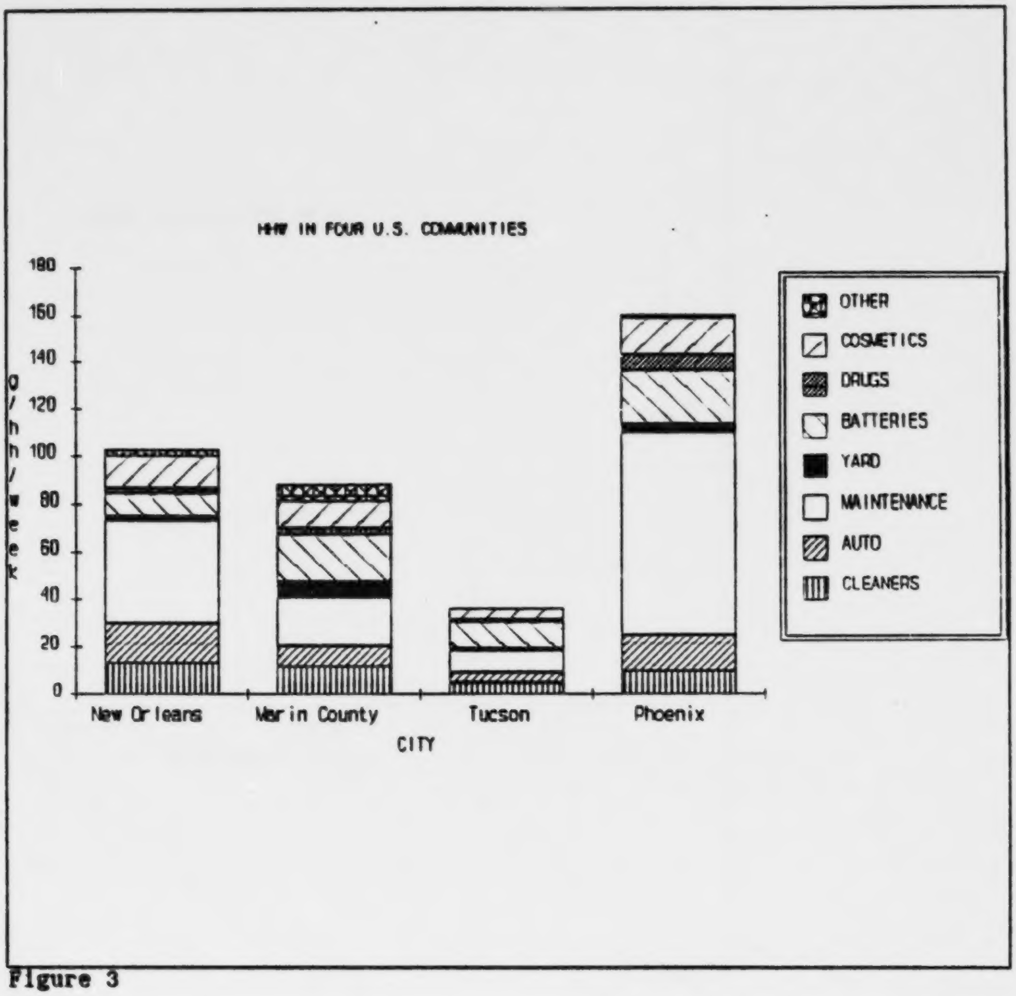


Figure 3

Note: based on the weight of commodity waste only (no container weights included).

SOURCE: Wilson, University of Arizona

Figure 9H

D.C. Wilson **November 3, 1988**

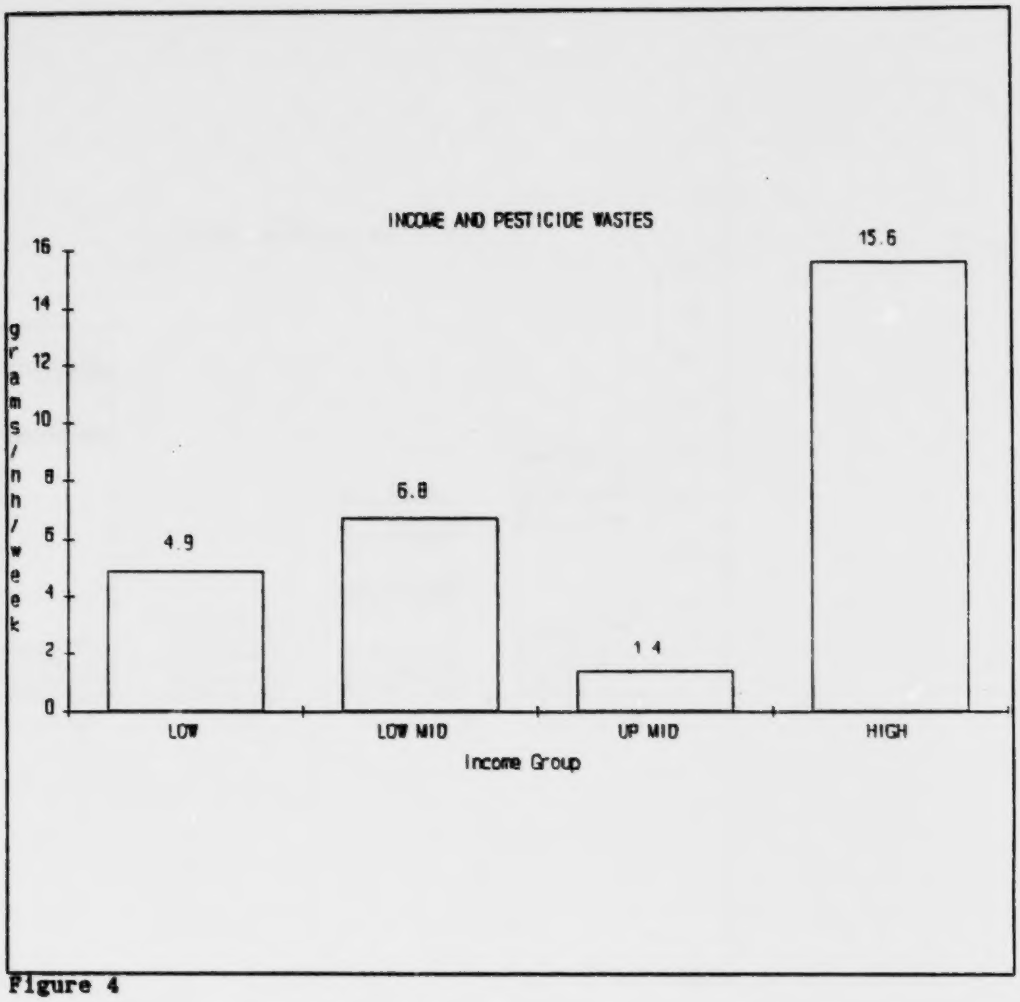


Figure 4

Note: based on the weight of commodity waste and container weight.

SOURCE: Wilson, University of Arizona

- Differences between communities in both types and quantities of HHW can be quite distinctive. Major differences are likely related to large-scale environmental and cultural differences. Many of the differences can be ascribed to socioeconomic variability between the census tracts.

- Landfill studies support the hypothesis that landfilled residential wastes may contain higher concentration of hazardous materials than commercial wastes.

The fifth and final conclusion of the Wilson-Rathje presentation was that further data are required to fully characterize HHW, especially examining the impact of self-haul wastes and multi-unit containers on the generation of HHW. Further data are also required to better understand both the relationships between HHW and landfill leachates and the process of biodegradation of HHW in landfills.

Based on their data collected thus far, it appears that HHW is diverse in character and widespread in discard. Differences in discard rates from community to community and census tract to census tract may effect the relative role these wastes play in collection programs and the risks posed to environmental resources.

LANDFILLS

Robert Landreth, Chief of the Landfill Technology Section, Risk Reduction Engineering Laboratory, U.S. EPA, Cincinnati, Ohio.

Landreth discussed issues regarding municipal solid waste with particular attention to HHW in the waste stream. The presence of HHW has implications for the design of landfills. Therefore, it is a risk that EPA is concerned about.

Landreth said that all wastes are important. Although work continues in the RCRA Subtitle C area (hazardous waste), EPA's role is expanding into the municipal solid waste sector, an area that was worked on until attention shifted to hazardous waste in the mid- to late seventies.

In considering landfill design, there is necessarily a concern with the quality and quantity of municipal solid waste. Landreth urged that anything and everything be done to remove hazardous products (pesticides, poisons, oils) that are potentially damaging to containment technology systems. There is a need for education of the public as to what are hazardous products and what to do to dispose of them. Landreth covered some areas of concern. One area of concern focuses on poorly designed facilities. Another concern is attenuation of landfills. Unfortunately, not enough is known about the assimilative capacity of landfills.

Landreth made the point that there is as much of a problem with citizens and their disposal habits as there is with the waste itself.

As for data presented at the conference by various speakers, Landreth stated that it could be manipulated in risk models to say whatever people want, that is, that HHW is a problem, or that HHW is not a problem.

RCRA Subtitle C studies have been helpful not just for the RCRA program but also to give them indications of what may occur in municipal solid waste landfills.

Landreth said that they are looking at ways to remove the hazardous components from landfills. Alternative disposal for liquids is recommended. No liquids should be allowed to put added stress on containment systems in landfills. Toxicity and volume should be reduced. Research is needed on how to prevent or minimize the particular impact of leachate or gas. Above all, the public must be educated and involved.

RESOURCE RECOVERY

David Sussman, Vice President, Ogden Projects, Inc., Ogden-Martin Systems, Alexandria, VA.

Sussman spoke from the perspective of an operator of a waste-to-energy plant. He discussed what happens to HHW when it goes into one of his company's incinerators, from an air, ash and OSHA standpoint. Chemical constituents having not been mentioned by others, Sussman pointed out that more than 90 percent of HHW is organic.

HHW gathered through a collection program is frequently taken to a hazardous waste incinerator where requirements mandate a destruction factor of 99.9 percent. Because HHW is a small percent (less than one percent) of municipal solid waste and because metals in HHW are in the parts per million range, Sussman stated that the increased loading of metals to the environment by burning HHW along with municipal solid waste is statistically insignificant. Of all HHW, batteries are good items to keep out of combustion devices. This is true for both dry cell batteries (containing mercury) and lead-acid batteries.

Another category of waste that no incinerator operator wants to deal with is explosives. Otherwise, according to Sussman, most wastes collected at collection days are best handled by being incinerated.

Sussman said that those concerned about hazards in household waste should look at the bacteria and viruses in household wastes. He felt that these are some of the most serious hazards to health, and that they should be dealt with.

WATER

David Galvin, Senior Water Quality Planner, Seattle Metro Water Resources, Seattle, WA.

HHW in municipal wastewaters and storm drains was Galvin's topic. Galvin stated that households are a potentially significant source of toxics in wastewater. Looked at another way, the drain is a potentially significant avenue of disposal of household toxics. There are three systems of wastewater management:

- On-Site -- septic tanks, drainfields, cesspools
- Regional or municipal sewerage systems -- sole level of treatment at a central treatment plant
- storm drains systems -- street drains, parking lot run-off.

Domestic wastewater is a combination of human waste, graywater from laundry and bath, food remains from the garbage disposal, and waste from repairs and hobby activities put down the drain. It consists of 99.9 percent water by weight, only 0.02-0.03 percent suspended solids, plus even less of other constituents. This means that relatively small concentrations of things (at the part per million or part per billion levels) can be quite significant.

A number of consumer products contain hazardous chemicals, and studies have shown that there are heavy metals and toxic organic chemicals in residential wastewater. (See Figures 10 - 10B.) Galvin went on to describe the three systems and the problems caused by HHW in them.

For on-site systems (septic tanks), lightweight or volatile organic solvents present the worst problem. These solvents go through on-site systems and adjacent soils and have the greatest likelihood of reaching nearby groundwater. Since on-site sewage

Figure 10

Table 1. **Heavy Metals in Domestic Wastewater.** Mean values are shown from three studies, in parts per billion or micrograms per liter.

Element	Chicago (Gurnham et al., 1979)	Seattle (Cooley et al., 1984)	EPA 4-cities study(a) (Levins et al., 1979)
Antimony	N/A(b)	2.1	2.7
Arsenic	N/A	2.9	4.8
Copper	1.8	1.4	1.8
Chromium	5.5	12.0	16.3
Copper	43.0	72.0	72.0
Lead	17.0	91.0	97.0
Mercury	0.3	0.4	0.4
Nickel	20.0	22.0	4.2
Silver	N/A	1.7	2.2
Zinc	107.0	150.0	214.0

(a)Cincinnati, St. Louis, Atlanta and Hartford.

(b)N/A = not analyzed for in this study.

SOURCE: Galvin, Seattle Water Pollution Control Department

Figure 10A

Table 2. **Heavy Metal Contributions from Household Products likely to enter Domestic Wastewater.** Values are given in micrograms per capita per day, from Gurnham et al. (1979).

	Metal Contribution						
	Cd	Cr	Cu	Pb	Hg	Ni	Zn
Mouthwash	0.3	2.1	1.7	1.2	0	69.9	2.9
Toothpaste	4.2	11.3	26.4	29.3	0.1	326.8	17.3
Toilet Tissue	4.5	21.9	3.8	23.9	0.6	108	31.3
Bath Soap	18.3	267	104.7	141.2	6.3	4404.3	117.9
Waterless Hand Soap	0	0.1	0	0.1	0	0.5	0.2
Shampoo	0.2	4.0	1.3	0.6	0	32.1	44.9
Creme Rinse	0.11	1.8	1.0	0.5	0	15.9	1.2
Baby & Bath Oil	0.4	6.5	2.3	0.6	0	80	7.8
Skin Lotion	0.4	5.7	1.2	0.7	0	86.8	6.2
Acne Lotion	0	0	0	0	0	0.36	0
Shave Creme	0.1	1.8	0.7	0.2	0.1	18.7	1.2
Pre-shave Lotion	0	0.1	0	0.1	0	0.6	0.5
Depilatory Creme	0.1	0.1	0.1	0.4	0	1.2	0.2
Liquid Dish Detergent	4.5	22.2	32.8	2.0	0	536.6	5.6
Dishwasher Detergent	1.3	13.1	7.3	2.8	0	2363.7	12.8
Powder Kitchen Cleaner	0.6	11.9	13.4	3.0	0	1491.7	312
Steelwool Soap Pads	1.0	1.1	5.2	0.1	0.1	15	0.8
Toilet Bowl Cleaner	0.3	6.3	4.5	0.9	0	283.9	30.8
Drain Opener	0.1	0.8	0.1	0	0	10.1	0
Liquid Laundry Soap	2.3	7.9	6.6	2.7	0	97.6	14.6
Powder Laundry Soap	26.6	221.9	249.4	31.3	0.3	11523.6	94.5
Fabric Softener	7.4	10.1	9.3	24.9	0	95.8	4.3
Liquid Cold Water Wash	0	0.1	0	0.01	0	0.5	0.1
Liquid Bleach	3.6	10.7	5	2.0	0	519.6	8.1
Powder Bleach	2.5	22.7	24.3	1.5	0	1162	11.2
Liquid Household Cleaner	1.7	7.6	3.4	2.1	0	92.4	10
Household Powder Cleaner	0.7	3.2	3.2	0.1	0	104.6	1.8
Liquid Dye	0	0.3	2.3	0	0	6.7	0.4
TOTALS	81	662	510	272	7.5	23449	738

SOURCE: Galvin, Seattle Water Pollution Control Department

Figure 10B

Table 3. **Organic Chemicals in Domestic Wastewater.** Mean values are shown from two studies in parts per billion or micrograms per liter.

Compound	Seattle (Cooley et al., 1984)	EPA 4-cities study(a) (Levins et al., 1979)
Phenol	14.8	5.8
Naphthalene	3.8	2.1
Phenanthrene	0.9	NR (b)
Diethyl phthalate	10.4	9.8
Di-n-butyl phthalate	34.5	9.0
Butyl benzyl phthalate	36.4	6.8
Di-octyl phthalate (c)	20.4	6.8
Methylene chloride	77.8	NV (d)
Chloroform	4.2	3.0
Trichloroethylene	4.3	0.4
Tetrachloroethylene	125.0	6.3
Benzene	5.0	0.2
Ethyl benzene	1.0	0.4
Toluene	3.1	2.6

(a)Cincinnati, St. Louis, Atlanta and Hartford

(b)NR = detected but mean not reported because of low detection frequency.

(c)Includes bis (2-ethylhexyl) phthalate.

(d)NV = no value reported because of unreliability of analyses.

SOURCE: Galvin, Seattle Water Pollution Control Department

treatment systems are not designed to treat hazardous chemicals, Galvin said that these chemicals have no place being put down the drain. In reference to municipal sewerage systems, all studies that have looked at the contribution by residential sources of hazardous constituents have shown that domestic sources contribute heavy metals and toxic organic chemicals to treatment facilities. In Seattle, they have a policy of responsible management at the source, believing that the most cost-effective way to control hazardous chemicals is to not allow them to get into the wastewater or environment in the first place.

The third category, storm drains, is rarely connected to any kind of treatment facility. Whatever goes down a catch basin or storm drain goes untreated into local waters. It is common for people to dump used motor oil, anti-freeze, gasoline, car washwater, acid masonry wastes, paints, and pesticides down storm drains. Stormwater run-offs wash other hazardous chemicals into the storm drain. Because of their immediate release to the local environment, no wastes, especially HHW, should be dumped into drainage systems.

SESSION M: HOW TO RUN A COLLECTION PROGRAM

LIABILITY

James Dougherty, Chief of the National Projects Branch in the Office of Enforcement and Compliance Monitoring, U.S. EPA, Washington, D.C.

Dougherty spoke about liability under RCRA and CERCLA liability as it pertains to HHW collection. For more information, please see the summary of Dougherty's speech that was delivered during the Closing Plenary Session.

RFPs AND CONTRACTS

LeeAnn Merashoff, HHW Program Manager, Northeast Solvents, North Andover, MA.

A good RFP should include a detailed background/narrative description that includes a description of what the collection organizers intend to do, demographic information, the amount and types of funding available, and other relevant information. The bid specifications should enable the collection program planners to obtain:

- available collection dates
- references
- a list of wastes that contractors will not accept
- a description of what wastes will be consolidated and into what size
- a breakdown of costs, including set-up costs and what services are included in these costs
- information on how waste oil and batteries will be handled
- information on the number and extent of training of personnel
- a description of how the company will respond to spills, snow, or rain

the municipal solid waste stream because of the high metal content (lead, cadmium, mercury, nickel) and the associated hazards. Efforts to manage car batteries in Minnesota have included landfill bans, mandatory "take backs," and posted notices. Efforts to manage household batteries have been undertaken in Sweden, Japan, Missouri, New York City, New Hampshire, and Vermont. A New Hampshire/Vermont Solid Waste Project resulted in 70 participating stores collecting, sorting, and selling batteries for recycling. Nine tons of batteries have been collected through this program.

Pesticides are generally handled as part of "normal" HHW collection days, although there have been some "pesticide only" collection days (which often include farmers). Agricultural "pesticide only" collection days have been held in Minnesota.

SESSION N: USED OIL

THE EPA PROGRAM

Susan O'Keefe, Attorney Advisor, Municipal Solid Waste Program, Office of Solid Waste, U.S. EPA, Washington, D.C.

EPA estimates that do-it-yourself (DIY) oil changers account for 200 million gallons of used oil per year. EPA also estimates that sixty to ninety percent of this oil is disposed of improperly. O'Keefe says that industry estimates project that DIY oil changers will generate 230 million gallons in 1997. O'Keefe maintained that it is becoming increasingly important to step up recycling efforts given these current and future volumes, the potential threat to the environment, and the likely energy savings that can be generated by recycling.

O'Keefe provided an overview of the Federal statutory provisions regarding used oil. In 1980, Congress passed the Used Oil Recycling Act, which directed EPA to promulgate regulations by October 15, 1981, to protect against hazards associated with recycled oil. Under the Act, EPA was to ensure that such regulations do not discourage recovery or recycling of used oil. The EPA was also directed to determine whether or not used oils should be classified as hazardous waste.

In 1985, EPA issued a proposal to list used oil as a hazardous waste. The Agency also finalized the requirements for burning used oil for energy recovery.

In 1986, EPA decided in its final regulation not to list used oil that was destined for recycling as a hazardous waste. The basis of the decision was that the label of hazardous waste might create a stigma, discouraging recycling and its environmentally beneficial effects. It was also decided that used oil destined for disposal might be regulated under RCRA or the Toxic Substances Control Act.

In the fall of 1988, the U.S. Court of Appeals ruled in favor of a Natural Resources Defense Council/Association of Petroleum Re-refiners/ Hazardous Waste Treatment Council lawsuit to reject the decision not to list used oil as a hazardous waste in order to avoid the "stigma effect."

EPA is currently reviewing the options available after the court decision. In the event that used oil is listed as a hazardous waste, the SQG, generation and transporter standards of RCRA will not apply to used oil if such oil is recycled.

EPA is supporting state and local used oil programs through a clearinghouse on used oil initiatives. EPA publishes the Used Oil Recycling Bulletin, and is working on a manual called How to Start a Community Used Oil Recycling Program. In addition, the Agency is preparing several pamphlets that can be distributed by state and local programs. One is for service stations and other facilities that collect used oil centrally; the other is a handout for the DIYer on how to recycle used oil properly.

O'Keefe stressed the importance of segregating used oil from other types of recyclables so that there is no contamination, and the importance of public outreach. She concluded by saying that EPA is committed to used oil recycling at the state and local level, and that oil recycling is no longer a backseat issue.

STATE AND LOCAL COLLECTION PROGRAMS

Robert Arner, Versar, Inc., Springfield, VA.

The purpose of Arner's talk was to discuss different types of community-based programs that deal with used oil, including HHW programs that collect recyclable used oil in addition to actual wastes. Emphasis was placed on oil generated by DIY oil changers.

Oil generated by DIYers accounts for over one-sixth of the total used oil generated each year (200 to 360 million gallons). EPA estimates that about ten percent of DIY oil is properly recovered.

Arner listed three basic environmental goals of used oil programs:

- o To protect the environment from spills both from DIYers and from improperly operated hauling or recycling operations
- o To conserve energy
- o To preserve resources.

These goals can be achieved by:

- o Reducing illegal dumping
- o Keeping recyclable used oil uncontaminated and separate from waste products
- o Ensuring that collected oil is safely and properly recycled.

Illegal dumping can be addressed through public education and by providing convenient recycling opportunities. Segregating used oil from other substances is important because contaminated oil is less valuable to recyclers than non-contaminated oil. Contaminated oil may be unacceptable to recyclers.

According to Arner, there are basically two types of community programs that deal with used oil.

- Most programs are used-oil-only programs for which the goal is to improve the recycling of DIY used oil

- Others are HHW programs that collect used oil in addition to hazardous wastes. These programs either send used oil to treatment or disposal, or they recycle it.

Used oil programs are generally set up at the community level with the support of local and state governments. Collection methods used by community programs depend on the type of program and the available resources. Used-oil-only programs tend to rely on curbside collection or on central collection stations. HHW programs collect used oil at central locations set up for HHW collection days.

CENTRAL COLLECTION CENTERS

Today, many commercial centers, such as service stations and retail stores, that used to accept used oil from DIYers have discontinued this service. Reasons include the declining price of used oil and concerns over possible financial liability. In order to take up the slack, non-profits and other non-commercial groups are setting up central collection sites at locations such as fire stations and landfills.

CURBSIDE COLLECTION

Although curbside collection is more expensive than central collection, Arner stated that curbside collection is probably the most effective way to get consumer participation in recycling. Curbside collection of used oil is practiced in over 115 communities throughout the U.S.

HHW COLLECTION PROGRAMS

Used oil is collected at most HHW collection days. For example, Fairfax County, Virginia had two collection days that generated 4,500 gallons of used oil. This program does not separate used oil from hazardous wastes because of logistical and liability concerns. Instead, it lab packs the oil and sends it to incineration at a cost of $2.72 per gallon.

Some HHW programs collect used oil separately so that it can be recycled. At worst, programs have to pay between $0.05 and $0.50 per gallon for recycling as opposed to costs like the $2.72 per gallon that the Fairfax Virginia program faces.

One of the oldest oil collection programs is the University of Alabama's Recycling Oil Saves Energy program - Project ROSE. Through the program, used oil is primarily collected through service stations, although oil is collected at curbside as well.

The State of Michigan has educational programs, collection sites, and curbside pickup in 62 of the State's 83 counties. All collection and educational efforts in Michigan are promoted by the Western Michigan Environmental council. Michigan estimates that almost one million gallons of DIY used oil were collected in Michigan in 1987.

Virginia, Washington, Oregon, and other states also run aggressive programs. Virginia has one of the most active programs on the East Coast with an estimated 527 collection stations. In Washington, citizens can call an 800 recycle hotline number for information on where they can take used motor oil. In Oregon, curbside pickup of all recyclable materials is required in cities of 3,500 people or more under the state's Opportunity to Recycle Act of 1983.

BFI'S CURBSIDE COLLECTION PROGRAMS

Lynn Ingraham, Safety Manager, Browning Ferris Industries (BFI), San Jose, CA.

BFI, a solid and hazardous waste contractor, initiated a curbside motor oil collection program in Milpitas, California, a community of 48,800, in response to the company's concerns that:

o Oil was contaminating residential trash destined for sanitary landfills (waste oil is regulated as a hazardous waste in California).

o Oil spills and sprays were occurring when oil containers were compacted in BFI garbage trucks.

o Oil was posing a safety hazard to collection workers, staining uniforms, and leading to productivity losses.

BFI initially retrofit its refuse collection vehicles with ten-gallon holding tanks on the undercarriages. Residents were asked to leave their used oil at the curbside in bleach bottles, or in the one-gallon milk cartons available at BFI's office or at a District Fire Department. BFI anticipated a one percent participation rate.

Within the first months of the program, BFI was inundated. The ten-gallon holding tanks were not adequate for the volume of oil. Additional ten- or twenty-gallon tanks were attached to truck undercarriages.

BFI truck drivers monitor compliance with the program. If they notice that some residents are still using the practice of hiding oil in the trash, BFI sends a letter, carbon-copied to the fire department, reminding the resident that the used oil collection program is in effect.

BFI has concluded that the benefits far outweigh the costs of this curbside collection program. The results for 1987 are as follows:

Population (Milpitas, September 1988)		45,800 people
Gallons Collected		12,595 gallons
Cost/gallon to Dispose	($.10)	1,295.50
Estimated Households		15,000
Average Per Participating Household		1.2 gallons

RECLAIMING

John Nolan, President, National Oil Recycling Association, Reston, VA.

Nolan discussed collection and reclamation of used oil. He stated that as a nation, the U.S. generates approximately 1.2 billion gallons of used oil per year. About 700 million gallons of that oil is automotive crank case oil. Roughly 65 percent (450 million gallons) of all oil changes are done by DIY oil changers.

The Used Oil Management System

Nolan noted that oil does not wear out -- it just gets dirty. It can be re-refined into good quality lubricating oil, or with much less sophisticated reprocessing, made into fuel oil. The used oil recycling industry now processes more than 500 million gallons of used oil every year and is available to accept the 450 million gallons of DIY oil.

The oil recycling industry is not a highly organized industry. It is made up of small businesses ranging from very small (such as the owner of a single tank truck who collects oil in a few small cities and towns), to the very large (such as the recycling plant that processes as much as 20 million gallons per year). The EPA has identified approximately seven hundred used oil collection companies and two hundred and forty recycling companies that produce fuel oil from waste oil. Most of these recyclers process less than three million gallons per year.

There are a variety of industrial users of recycled oil fuel, including steel mills, cement kilns, power plants, greenhouses, marine diesel engines, industrial boilers and furnaces, and asphalt plants. The nation's three thousand oil fired asphalt plants are a particularly attractive market because they operate in virtually every county in the country.

The Economics of Recycling Oil

In order for a viable market to exist for recycled oil, the price of virgin oil must be high enough for the recycler to provide a customer discount. A discount is necessary because the customer risks high water content or dirt that can clog a burner when recycled oil is used. Between 1980-84, there was a strong market for recycled oil. After OPEC (Organization of Petroleum Exporting Countries) lost its grip on the market, however, the price of crude and used oil plunged. Today, collectors can no longer pay used oil generators for the used oil. Thus, the economic climate has been producing a growing disincentive to used oil recycling.

Nolan cited an example of one oil processor in Washington, D.C. that has tried to build more confidence among used oil generators. This effort involves publishing a range of prices that the processor will pay or charge for used oil collection, depending upon the price of virgin oil. This helps generators realize that prices are derived in a fair, objective manner.

Liability

Nolan concluded that one of the largest obstacles to the collection of DIY oil is liability. He said that everyone is sensitive to the danger of getting stuck with a load of oil contaminated with something that will require the whole load to be managed as hazardous waste (if it is not already managed as such). Nolan maintained that in order to address the liability issue, there will have to be cooperation and fair enforcement of regulations which recognize the responsibilities of service stations, collection processors, end users, and communities as players in the management of used oil.

RE-REFINING

George Booth, Executive Director, Association of Petroleum Re-refiners, Booth Oil Company, Buffalo, NY.

Booth provided a distinction between recycling and re-refining. Booth said that the "purist" definition of solid waste recycling is to reuse a material in its original form. Recycling in the used oil industry, however, can include burning for energy as well as oil reuse (re-refining). The re-refining process employs complex technical operations and processes to produce a contaminant free lubricant base oil. It also produces by-products.

Re-refining includes distillation processes that include dehydration, vacuum fuel/light oil stripping, and vacuum distillation. It also includes finishing processes that includes hydrotreating and fractionation. Hydrotreating is a relatively new process that involves final purification of the used oil by reacting the hydrogen with the halogens, sulfur oxygen and other remaining compounds.

In the 1950s, over one hundred re-refiners were producing over three hundred million gallons of oil per year. Today, only a handful of re-refiners are producing approximately 60 million gallons per year. Booth said that there is still a future for the industry. For example, the Safety Kleen company is planning to build two new re-refiners of significant size.

Booth made the following suggestions for solutions to promoting used oil re-refining:

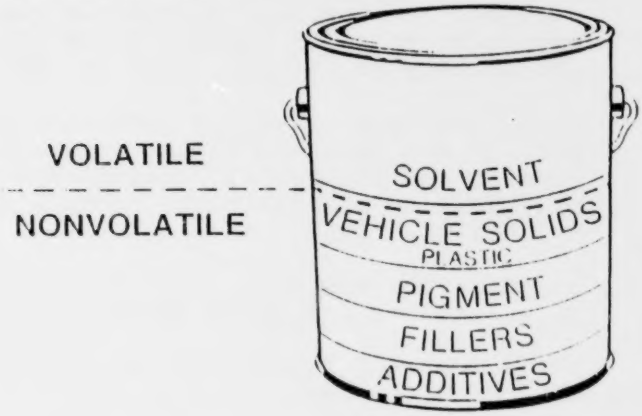
- Developing a practical guide
- Providing public education
- Designing incentives to help make collection and disposal convenient, incentives for deposits, and providing protection from liability as an incentive to re-refining.

SESSION O: PAINT

OVERVIEW OF TYPES OF PAINTS

Ronald Child, Technical Director, California Products Corporation, Cambridge, MA.

A TYPICAL CAN OF PAINT



As the diagrammatic representation of a typical can of paint illustrates (above), a significant portion of paint is made up of volatile ingredients. These may be organic solvents, such as mineral spirits as would be found in an alkyd paint, or plain water as would be found in a latex paint.

Paint manufacturers would prefer not to have volatiles in paints since the volatiles only cause problems, such as blistering, odor, and combustibility. The solvent is present only to give the paint its applicability. Unfortunately there are not suitable polymers to use in formulating quality paints that are thin enough to properly apply without these solvents, so manufacturers are forced to use them. When paint is hazardous, it is because of the presence of mineral spirits, which are combustible, as well as being orally toxic.

The functions of the other ingredients in the typical can of paint are as follows:

- o "Vehicle solids," or the binder in paint, is the plastic ingredient that holds all of the other solid parts together. It is this binder that gives the paint its name such as "alkyd" or "acrylic latex." The binders, or plastic portions of paints, are generally non-hazardous.

- o The most commonly found paint is latex. Many latex paints contain mercury, which is used as an in-can preservative. According to Child, it is present at the .05 to .06 percent level.

- o Common pigments are titanium dioxide and iron oxides. The pigments in household paints are chiefly there for the imparting of color, giving paint its decorative property, and its ability to conceal flaws in the surface being painted.

- o Fillers are often included with pigments as a class, but they do not have the hiding properties of pigments. Fillers function as flatteners, pigment spacers, and have brushability and viscosity control functions. Typical fillers are clays, talcs and chalk.

- o Additives may be dryers, sag-control agents, and preservatives (in latex paints).

The scrubbability of paint is a result of the amount and quality of the binder.

Less common in households are specialty paint products such as lacquers, shellacs, metal primers, epoxy, and urethane products. All of these are flammable or combustible and some contain solvents that are more toxic than mineral spirits. These are most often found in containers smaller than one gallon.

Now that lead is controlled to less than 0.06 percent in dry films of paint, there are seldom any hazardous ingredients in dry films of ordinary household paints, although some metal primers have toxic pigments.

It is important that paints not be transferred to other containers such as bottles, jars, or coffee cans for storage, since manufacturers' warning labels are seldom transferred with the products.

INDUSTRY RESPONSE

Robert Foreman, Associate Director, State Affairs Division, National Paint and Coatings Association, Washington, D.C.

NPCA is a trade association representing 700 paint and chemical companies. Although the association represents many of the large manufacturers of paints and coatings, 85 percent of its membership is small company operators.

NPCA has been addressing the HHW issue for the past two years. For the benefit of those not present for the opening Plenary Session, Foreman briefly reviewed NPCA's efforts, which have been to produce a brochure instructing consumers on proper disposal techniques and to add wording to product labels regarding proper disposal. (See Opening Plenary Session.)

MANAGEMENT OPTIONS

Diane Christensen, San Bernardino County Health Department, San Bernardino, CA.

Christensen stated that paints account for 50 to 60 percent, sometimes more, of the wastes brought into HHW collection events.

She covered aspects of three different kinds of paint management programs. The focus of her remarks was on the handling of latex paints in southern California. In that part of California, the use of solvent based paints is diminishing, largely because of concerns over their impact on air quality. Figure 11 provides some average costs for the various approaches.

Usable Paint Redistribution. Paint exchanges are the most common means of redistributing usable paint. The City of Santa Monica, CA was the first to try this. The public, community groups, churches and schools were invited to take the paint. Any remaining paint was used by a local graffiti removal program. Santa Monica has since built a permanent facility for the collection of all types of HHW.

Usable Paint Referral Programs. The MN Pollution Control Agency has two systems to safely and inexpensively dispose of paints. The first system involves sorting and separating paints coming into collection events. They have three categories: non-hazardous paint, such as dried paints; bad paint (this is bulked and disposed of at a hazardous waste incinerator); and good paint. For good paint, local organizers are encouraged to find local outlets.

Figure 11

AVERAGE COSTS

Costs:

Latex Paint Reprocessing By Major Paint Company (Get back 55 gallon usable paint in 5 gallon buckets)	$ 1.75/gal. 96.25/drum
Oil/Solvent Base Paint Disposal Paint Pumped by HazCo International, Inc. Sent to Omega Recovery or Osco (Oil and Solvent Process Company)	$ 1.27/gal. 69.85/drum
PCB contaminated paint incineration Chemical Waste Management	$450 - $750/drum according to solids content
Labor - For bulking 55 gallons of oil base paint by one worker.	6 hours
Labor - For bulking 55 gallons of latex paint by one worker.	5 hours
Drum costs for latex	$28.50/55 gal. drum
Drum cost for Oil Base (one time cost) (secondary containment)	$28.50/55 gal. drum $90.00/85 gal. recovery drum
Miscellaneous costs for gloves, goggles, aprons, respirator cartridges, etc.	$20.00/drum

Addresses:

Hazco International
1891 Preston White Drive
P.O. Box 2459
Reston, Virginia 22091
(703)620-4700
(800)237-1333

Major Paint Company
4300 W. 190th Street
P.O. Box 2882
Torrance, CA 90509-2882
(213)542-7701

SOURCE: Christensen, San Bernardino County Health

The second system is for people without access to a collection center. This is a non-collection system. The coordinator provides those wanting to get rid of paints with the names of people and organizations wanting paint.

Reprocessed Paint Distribution. In this system, paints are run through a batch feed program ending up with a uniform product that is packaged and ready for reuse. In San Bernardino, finding users has been an interesting challenge. Examples of reprocessed paint users are a minimum security correctional facility (inmates were used to apply the paint) and a senior housing repair program. In general, non-profit organizations are delighted to know about the availability of the free, recycled paint.

Christensen's concluding remarks dealt with some of the problems associated with the three systems. The main one is finding users for the paint. This may be difficult in some cases. Another problem can be the disposal of oil and solvent-based paints, since paints manufactured prior to 1978 can contain PCBs. There is a need to be aware of this potential for contaminating bulked paints.

LATEX PAINT RECYCLING

Richard Conlin, Project Director, Metrocenter YMCA, Seattle, WA.

While the debate over whether to accept latex paint at collection days continues in Seattle/King County, they continue to accept it. Reuse and recycling is encouraged as the first option. Because latex paint is not particularly hazardous, reasons can be found to exclude it. The reasons they choose to accept it are twofold. First, older latex paint may have hazardous constituents, mercury in particular. Secondly, it serves as a "loss leader" that draws people to collection programs to which they often bring, in addition to latex paint, small quantities of highly toxic materials.

At the June 1988 collection, 202 drums of bulked latex paints were collected. This effort used 20 to 25 percent of the labor force and the disposal cost was $70,000. These kinds of statistics are the incentive to use an alternative approach.

A project, jointly funded by the Seattle Solid Waste Utility and the Puget Sound Paint & Coatings Association, has the goal of giving options to decision-makers about what to do with latex.

SESSION P: LEGISLATIVE

OVERVIEW OF CURRENT LAWS, RULES AND REGULATIONS

Leslie Lewis, Citizens' Participation Coordinator, Information and Education Unit, Connecticut Department of Environmental Protection, Hartford, CT.

Although HHW is not regulated as hazardous by the federal government, many states have developed statutes, regulations or guidelines for the safe handling of these materials. Some of the laws provide definitions of HHW, others define how it should be collected, and others set up funding mechanisms for state or municipal programs. There are other approaches, as well. The following six programs highlight a range of state activities across the U.S.

Connecticut. Connecticut law requires the state to establish an HHW program that includes guidelines, mandates a report to the legislature, and requires communities to use licensed hazardous waste contractors that sign-off on the manifest as the hazardous waste generator. Connecticut's guidelines, which will be turned into regulations, outline the procedures for holding collections and for obtaining state matching grants of up to 50 percent. The Connecticut legislature has not yet provided for permanent HHW collection facilities.

Minnesota. The Minnesota Pollution Control Agency (MPCA) is required by state law to manage HHW by establishing collection sites, and providing information, education, and technical assistance. The central office is to provide a hotline and administer grants for ten to twenty collections. Three to six satellite offices are to provide ongoing, low profile collections and public information. The MPCA is authorized to arrange contracts for the satellite offices. The MPCA must be notified about who will manage the collected wastes, and it must be managed in compliance with hazardous waste generator standards. Volunteers who work at collection sites are provided with worker compensation coverage if they are not already covered.

California. California authorizes cities and counties to raise tipping fees at solid waste facilities to cover the cost of establishing, advertising, and maintaining HHW programs. The state is required to assist local governments and to provide public information. The California Waste Management Board is charged with the responsibility of developing model operation plans for community collection programs, and proper procedures for handling, storage, transport and training. The Board is also charged with establishing guidelines on the types of household substances to be disposed of as HHW.

Washington. Under Washington state law, local governments are responsible for preparing plans for the management of HHW generated within their local boundaries. The Department of Ecology has prepared guidelines for local plans. Local governments are required to manage HHW as hazardous materials. Management generally includes one-day or permanent collection programs. The goal of the programs is to help keep hazardous waste out of the municipal waste stream.

Iowa. The state of Iowa requires permits and shelf labeling by retailers of hazardous household products. The Iowa program was discussed by Stuart Schmitz of the Iowa Department of Natural Resources. Please see the summary of his presentation for more detailed information. (See session "F" - Funding.)

Florida. The Florida Amnesty Days and the Local Hazardous Waste Collection Center Grants Program were discussed by Jan Kleman of the Florida Department of Environmental Resources during the Funding Session. Please see the summary of her presentation for more detailed information. (See Session "F" - Funding.)

There are a wide range of laws, regulations, studies, programs, and other efforts that address HHW at the state level. A table highlighting these efforts was prepared by Dana Duxbury & Associates, and appears in Figure 12.

NEED FOR ADDITIONAL LAWS: INDUSTRY PERSPECTIVE

Donald Lofty, Vice President and Senior Counsel, Drackett Company, Cincinnati, OH.

The Drackett Company is a member of the Chemical Specialties Manufacturers Association (CSMA). The company produces Windex window cleaner, Drano drain cleaner, and Vanish toilet bowl cleaner.

Lofty said that Drackett does not oppose collection programs in principle. The company recognizes that some materials should be isolated from the general waste stream, such as used motor oil, gasoline, substantial quantities of poisons, and banned or cancelled pesticides. The company does have difficulty, however, when it comes to packaged consumer products that are used in the home. Lofty said that these products do not pose a real environmental threat when disposed in landfills in relatively small quantities.

Figure 12

1981-1988

STATE LEVEL HOUSEHOLD HAZARDOUS WASTE LAWS AND REGULATIONS

	Law	Study	Regulation/and or Guidelines	Define HHW	HHW Products Labelling	Reduction of Liability	State Education Programs	State Run Clean-up Programs	Pilot Clean-up Programs	State Legislative Appropriation	State Matching Grants	Use of State Superfund $	State Solid Waste Superfund $	EPA Clean-up Grant $	Retail Sales Permit Fee	Advisory Com. Report	Evaluation Report
1. Alaska	●							●		●							
2. Alabama																	
3. Arizona																	
4. Arkansas																	
5. California	●		Pe	●		●	●						●			●	
6. Colorado														●			
7. Connecticut	●		G,P				●			●	●*						●
8. Delaware																	
9. Florida	●		G				●	●		●							
10. Georgia																	
11. Hawaii								●		●				●			
12. Idaho																	
13. Illinois	●						●			●	●						●
14. Indiana																	
15. Iowa	●			●	●		●	●	●						●		
16. Kansas	●						●	●	●			●					
17. Kentucky																	
18. Louisiana																	
19. Maine																	
20. Maryland		●															
21. Massachusetts	●		G,P							●	●*						
22. Michigan			P				●			●	●*						

DATE: January 1989
SOURCE: Dana Duxbury & Associates
** See Appendix XVI for definitions of column headings

Figure 12
cont'd

STATE LEVEL HOUSEHOLD HAZARDOUS WASTE LAWS AND REGULATIONS

	Law	Study	Regulation/and or Guidelines	Define HHW	HHW Products Labelling	Reduction of Liability	State Education Programs	State Run Clear-up Programs	Pilot Clear-up Programs	State Legislative Appropriation	State Matching Grants	Use of State Superfund $	State Solid Waste Superfund $	EPA Clear-up Grant $	Retail Sales Permit Fee	Advisory Com. Report	Evaluation Report
23. Minnesota	●						●	●	●	●							●
24. Mississippi																	
25. Missouri	●	●								●							
26. Montana																	
27. Nebraska																	
28. Nevada																	
29. New Hampshire			G								●	●*					
30. New Jersey		●												●			
31. New Mexico																	
32. New York	●	●	Pe							●	●						
33. North Carolina		●															
34. North Dakota																	
35. Ohio																	
36. Oklahoma																	
37. Oregon	●						●										
38. Pennsylvania	●		P									●*					
39. Rhode Island								●		●							
40. South Carolina																	
41. South Dakota																	
42. Tennessee																	
43. Texas	●		P			●											
44. Utah																	

Figure 12
cont'd
1981 - 1988

STATE LEVEL HOUSEHOLD HAZARDOUS WASTE LAWS AND REGULATIONS

	Law	Study	Regulation/and or Guidelines	Define HHW	HHW Products Labelling	Reduction of Liability	State Education Programs	State Run Clean-up Programs	Pilot Clean-up Programs	State Legislative Appropriation	State Matching Grants	Use of State Superfund $	State Solid Waste Superfund $	EPA Clean-up Grant $	Retail Sales Permit Fee	Advisory Com. Report	Evaluation Report
45. Vermont			P							●							
46. Virginia		●															
47. Washington	●	●	P,G	●			●		G	●	G						●
48. West Virginia																	
49. Wisconsin			G,P				●			●	●			●			
50. Wyoming																	

P = Program, G= Grants, Pe = Permanent
* = Funded in 1988

Lofty noted that although a toilet bowl cleaner meets a RCRA criteria as a hazardous waste, the product is used in the toilet, brushed and flushed. Therefore, he said that it sends a confusing, mixed message to consumers to tell them to store the unused portion and then to bring it to a collection day so that it is disposed in a secure chemical landfill. He is also concerned that household products like toilet bowl cleaners are taking up very valuable hazardous waste landfill space. He concluded that it would be well for collection organizers to consider these views, for if they are right, the costs of collection programs can be reduced dramatically.

Lofty continued his presentation by discussing an industry position on legislative options.

1. Continued study makes sense when there is insufficient data and when there is uncertainty in regard to risks in remedies. Industry has and will continue to sponsor research and literature searches. CSMA welcomes the opportunity to work with government and responsible groups to try to broaden the research, and will support independent studies supervised by an advisory group that represents industry, activists, and waste management professionals.

2. Industry supports collection programs that are done on a voluntary basis. Although the scientific evidence may not support a need for these programs, pilot programs can provide useful data.

3. CSMA does not support mandatory labeling on a state-by-state basis. It is argued that labeling can geometrically increase sales and distribution costs without providing benefits to the consumer. Labels that warn not to dispose of a product down the drain or in the trash leave consumers no option other than to store wastes indefinitely if they do not have access to a HHW collection program.

4. CSMA is opposed to state mandated collection days. The industry association does not believe that in the long-term, consumers are willing to bear the high additional costs associated with disposing of common household products on a large scale basis as if they were hazardous wastes.

5. Education is a preferred option, although CSMA has some differences with others in regard to the curriculum. CSMA has formed the Household Products Disposal Council which encourages people to buy what they need, use what they buy, give left-overs to a friend or a charity, read labels carefully, and for extra protection to wrap

products in newspaper or in some other way to prevent leakage when the product is disposed.

Lofty concluded that there is a real opportunity for collection programs to solve what CSMA and others regard as the real problem facing us today in waste management: we have too much garbage. Lofty believes that the conference participants can help change this by focusing on realities. The reality is that although everyone is focusing on plastics as a means to reduce the waste stream, 50 percent of the waste stream is paper and only seven percent consists of plastics. He suggested that to reduce waste, we must go where the waste is and also allow the siting of new landfills. Lofty thinks that the conference attendees should help to increase recycling because they have the "wherewithall," the enthusiasm, and the networks to establish substantial recycling and to help the EPA to meet its goal of 25 percent recycling by the year 1992.

NEED FOR ADDITIONAL LAWS: GOVERNMENT PERSPECTIVE

Rep. Barbara Gardner, State Representative, Holliston, MA.

Massachusetts has an active HHW program, and many people are looking for new ways to address the problems. Massachusetts mandated a collection and education program through the state Department of Environmental Management, although there is no funding for the program this year. Gardner is hoping to see funding restored, although she believes that volunteer programs are important for raising consciousness and in educating communities beyond the level attained through government programs.

Representative Gardner noted several legislative options, some of which she supports. These include:

o Establishing a sales tax to fund a pool for disposal costs. The tax can be placed on hazardous household products, thus providing an incentive for people to use an alternative, non-hazardous product. The potential decreased sales of hazardous products may drive the creation of new markets for less hazardous products.

o More stringent labeling requirements. Labels currently include health, but not environmental warnings. Visual recognition on products such as symbols that identify products as biodegradable or that include information about disposal options could be employed on a uniform, national basis, possibly through the use of mandatory requirements or positive incentives that promote labeling.

- o Legislating funds for on-going educational programs. Most states are already doing this.
- o Banning the disposal of HHW in the solid waste stream.
- o Requiring recycling and reuse.
- o Requiring community HHW management plans.
- o Establishing a panel that would make initial recommendations on safer, environmentally sound products as candidates for a good housekeeping seal of approval. This could be similar to the West German "Blue Angel" program. This may be a very cumbersome program, although it has worked well in Germany.
- o Placing a deposit on products such as car batteries.
- o Collecting used motor oil at curbside.
- o Creating federal and state provisions for storing wastes, such as wood preservatives, for which there are currently no disposal alternatives.

NEED FOR ADDITIONAL LAWS: ENVIRONMENTAL PERSPECTIVE

Margie Alt, Toxics Program, Massachusetts Public Interest Research Group (MASSPIRG), Boston, MA.

MASSPIRG is a state-wide citizen organization with over 100,000 members in Massachusetts. The organization works on environmental, consumer, and energy policy issues. MASSPIRG traditionally focuses its hazardous waste efforts on the industrial sector, with particular attention placed on pollution prevention. The organization believes that the first question in regard to HHW is why do we use products that we do not know how to deal with, not where or how to dispose of them.

MASSPIRG may be proposing some ideas in the area of HHW in Massachusetts that may be applicable in other states. These include:

- o Achieving toxics use reduction through legislation requiring industries to reduce the amount of toxins that they use and produce. This could result in household products that contain less toxins.

o Improved product labeling so that people know what chemicals are contained in products, what the effects of these chemicals are on public health and the environment, and how to recycle or dispose of them properly.

o Placing deposits on household products such as batteries and paints that can be returned to the retailer, and strengthening the current Massachusetts law allowing people to return used motor oil to retailers. Deposits could provide an incentive for people to return hazardous household products, and for retailers not to sell hazardous products because of the inconvenience of accepting returns.

o Encouraging collection days and facilities to handle wastes for which the toxic components cannot be reduced or when the materials cannot be recycled.

CLOSING PLENARY SESSION

The third National Conference on Household Hazardous Waste Management was concluded with a plenary session on November 4, 1988. The session was moderated by Anthony Cortese, Director of the Tufts University Center for Environmental Management. Featured topics included Congressional concerns, liability, contracts and RFPs, and future trends in HHW management.

CONGRESSIONAL CONCERNS

Congressman Chester Atkins (D-MA), Representative from the 5th Congressional District.

Rep. Atkins believes that the public is worried about the condition of the environment, as well as frustrated with the government's failures in addressing public concerns. He postulated that this frustration is a reaction to some government officials who have demonstrated that it is easier to ignore environmental problems than it is to solve them.

Atkins maintained that improved household product labeling is an important approach to combatting HHW problems. He pointed to strict labeling requirements for mercury batteries in Switzerland as evidence of the importance of product labeling. According to Atkins, these requirements led to the Polaroid Corporation phasing out the use of mercury in batteries produced in Switzerland, and later in the U.S.

The Representative predicted that Congress will address HHW when the Resource Conservation and Recovery Act (RCRA) is reauthorized, possibly during 1989. The bill that is currently in the Senate, the Baucus Bill, includes provisions that would address HHW and require further studies to be conducted in this area by the EPA. In response to a question from the audience, Congressman Atkins concluded his talk by discussing the environmental record of Presidential candidate Michael Dukakis.

COLLECTION PROGRAM LIABILITY

James Dougherty, Chief of the National Projects Branch in the Office of Enforcement and Compliance Monitoring, U.S. EPA, Washington, D.C.

Dougherty discussed both RCRA and CERCLA liability. He began his speech with a disclaimer, noting that his views do not necessarily represent the official position of EPA. Under the federal RCRA Subtitle C regulations, HHW is exempt from regulation unless it is mixed with regulated hazardous waste of any quantity.

HHW is not exempt from CERCLA liability. CERCLA imposes strict joint and several liability upon hazardous waste generators. This means that a generator can be held liable for part or all of the cost of a hazardous waste cleanup, regardless of the relative amount of waste contributed by the generator, and regardless of whether or not the generator was negligent.

Dougherty maintains, however, that HHW collection organizers should not be overly concerned about CERCLA liability. This is because:

1) The owner/operators of licensed TSD facilities that receive HHW are generally large, insured companies which are required under RCRA to correct and clean up any releases to the environment, thus relieving generators of liability.

2) If EPA was to recover cleanup costs from hazardous waste generators, the bulk of the costs would be borne by the largest generators. Household waste collections would be regarded as "de minimis" quantities, thus communities would only be apportioned a small percentage of the costs (probably not more than $2500), and could not be charged again if the initial site cleanup was later deemed inadequate and in need of further corrective measures.

3) Communities are liable for HHW generation whether the waste is disposed of at a licensed hazardous waste facility, a municipal landfill, the sewer system, or any other outlet. Therefore, towns that succeed at directing HHW away from landfills or other facilities not licensed to receive hazardous waste may actually reduce their net liability. This is because HHW received by collection programs is managed at facilities designed with safeguards that are intended to minimize the probability of a release of hazardous waste to the environment.

CONTRACTS AND RFPs

Elizabeth McCormick, Household Hazardous Waste Collection Program Manager, GSX Chemical Services, Inc., Columbia, SC.

McCormick advised the conference participants in regard to writing requests for proposals (RFPs) and negotiating contracts with hazardous waste contractors. GSX has managed over 200 HHW collections across the country.

McCormick stressed that the most effective RFPs are those which most accurately describe the needs and expectations of the collection organizers. RFPs should include information about state and local laws that might impact upon the program. Communities should be sure to ask that contractors specify how costs are broken down (such as the services that the set-up fee includes), and whether there are any wastes that the contractor will not accept or for which the management costs are extremely high. McCormick suggested including an "escape clause" in the RFP to ensure that communities reserve the right to reject all bids or to modify the plan. Collection organizers should determine how much, who, and what is covered by insurance. She also recommended a pre-bid conference during which information can be communicated fairly to all potential bidders.

When evaluating proposals, McCormick recommended assessing how well each proposal corresponds to the RFP; determining if questions have been answered adequately; checking references; evaluating the technical ability of the contractor; comparing overall prices; and ensuring that indemnification language is fair to both parties.

FUTURE TRENDS

Five speakers presented perspectives on future trends in HHW collection and reduction. The panel discussion focused on the manner in which communities, government, industry, and the general public can or should address the reduction and safe management of hazardous household products and waste.

David Allen, Director, Preventive Environmental Protection Program, National Toxics Campaign, Boston, MA.

Allen maintained that HHW is only one aspect of the total pollution problem associated with the home. He recommended applying a holistic approach to HHW that focuses on hazardous waste reduction and prevention, and management across multi-media. Allen stressed that while HHW collection, labeling, and consumer education are important, attention must also be placed on the manufacturing end.

Allen argued that production-based environmental protection efforts, including input substitution and end product reformulation, should receive primary attention since the most reliable form of pollution prevention is source reduction. Allen added that industry can derive benefits from producing less or non-hazardous household products because of the accompanying decreased liability, overhead, waste management and compliance costs. Furthermore, production-based environmental protection programs will result in new patterns of investment that will benefit the economy by focusing resources on production instead of pollution management. He also maintained that this approach will reduce conflict between the public, government and industry, and that it is morally good to reduce pollution.

Dana Duxbury, Dana Duxbury & Associates, Andover, MA.

Duxbury's comments on future trends were given from the perspective of proponents of HHW collection programs, namely those citizens and local government officials committed to this issue. She said that their goals are conserving resources and preserving the environment, and that the long range goal of HHWM proponents is to work themselves out of business. Duxbury identified four areas of concern which must be dealt with in order to accomplish these goals. These concerns include removal of accumulated wastes, prevention strategies, development of industry support, and the role of Congress and the EPA.

Removal of accumulated wastes

In discussing the removal of wastes that have been accumulated in homes, Duxbury emphasized the importance of developing integrated waste management strategies which place emphasis on reuse and recycling. She believes that while there is a need to focus efforts on reducing the generation of HHW, collection programs are also important since they are a means for dealing with the waste that has already accumulated in homes. For example, pesticides which were banned a long time ago are still found in homes and continue to show up at HHW collections.

Duxbury said that work must be done to lower collection costs and that funding for HHW collections must be institutionalized. Although these programs appear expensive, prevention is always cheaper than correction. She also suggested that the definition of HHW needs to be broadened to include things such as home health care wastes, white goods (which are home appliances such as refrigerators and washing machines), and fluorescent light bulbs.

Prevention Strategies

According to Duxbury, education of the consumer is essential to an effective prevention strategy. Consumer education should focus on helping the public to understand the reasons to be concerned about HHW, and to follow proper household product use and disposal practices.

Development of Industry Support

Duxbury recommended that industry work to understand the concerns of citizens regarding HHW. She said that the train is out of the station on the issue of HHWM, and challenged industry to get on the train. Proactive industry efforts can include cooperation in product formulation, labeling, deposits, and take-back arrangements.

Role of Congress and the EPA

Congress

Duxbury suggested numerous areas in which Congress can play a role in HHW management. Areas that may be appropriate for Congressional involvement include labeling (such as symbols for ingredients and disposal), reduction and clarification of liability questions, encouragement of materials conservation, bans on disposal of certain products, requiring deposits to encourage recycling of some consumer products, requirements for product manufacturers to consider disposal consequences when designing products, promoting toxic use reduction, and providing research monies.

EPA

EPA should focus on integrating HHW issues with other EPA programs (indoor air, wastewater, solid waste, hazardous waste, pesticides) as well as other Federal agencies; permitting; liability; consolidation of rules and regulations that specify which wastes can go to a landfill or incinerator; product performance standards; and the establishment of a clearinghouse.

Ten-Year Plan

Duxbury proposed that the country should develop a ten-year plan to address HHW issues. Such a plan would include a strategy to remove the toxic components of household products and to enable stored and on-going HHW to be collected.

At the Federal level attention should focus on ensuring that the toxicity of household products be reduced. Industry should be encouraged to redesign products or to develop a take-back system for recyclable materials.

At the state and local level attention would need to focus on first developing and maintaining on-going collection programs to remove the accumulated and unavoidable HHW from people's homes. Secondly, extensive education programs would need to be created to ensure that consumers and homeowners were knowledgeable, encouraged to use alternatives, and that they did not dispose of HHW in an environmentally unsound manner.

T. K. Smith, Director of Government and Public Affairs, Dow Chemical Company, Midland, MI.

Smith offered an industry perspective on future trends in HHW. He noted that there are some companies, including Dow, that consider it a corporate responsibility to play an active role in resolving public concerns regarding HHW.

Smith said that Dow recognizes the importance of reformulating products, when possible, in order to minimize hazards. He added, however, that it is not always possible to produce household products with no toxic constituents. For example, products designed to disinfect and kill bacteria must have a toxic component in order to be effective.

Smith recommended the following roles for HHW actors:

- **manufacturers** should test products extensively for health and safety considerations, determine environmentally sound uses and disposal practices for their products, and explore product reformulation as a means to reduce product hazards;

- **packagers** should re-test products in all possible product combinations, and alert consumers to any hazards in use and disposal through product labeling;

- **consumers** should educate themselves and accept the consequences of their behavior and misbehavior;

- **government** can play an important role through public education efforts and by ensuring that it does not tie the hands of industry with red tape requirements such as state-by-state labeling.

Smith concluded his comments noting that source reduction and recycling must play an important role in HHW, that Dow will continue to operate by applying its WRAP (Waste Reduction Always Pays) concept, and that joint efforts are the key to real progress.

Howard Levenson, U.S. Congress Office of Technology Assessment (OTA), Washington, D.C.

Levenson noted that there is not much data on what substances and products are responsible for the most serious risks associated with landfills and incinerators. Therefore, he concluded that the extent to which HHW contributes to risk is not yet clear. He maintained, however, that it is still important to address HHW concerns because public confidence in government is promoted when the public sector responds to public concerns; reducing the amount of HHW in the municipal waste stream will not increase the risks associated with HHW; and reducing the amount of HHW in the municipal waste stream reduces potential liability for municipalities.

In Levenson's view, collections are important for addressing short-run waste management needs, but hazardous waste prevention is the key to addressing long-run concerns. He noted that there are many companies that are saving money through successful source reduction efforts. He concluded by stating that OTA will continue to study the problems by studying volume and especially toxicity reduction.

R. Bruce Weddle, Director of the Municipal Solid Waste Program, Office of Solid Waste, U.S. EPA, Washington, D.C.

Weddle was the final speaker during the panel discussion on future trends. He began his presentation by speaking of some of the merits of HHW collection programs. Some of the merits are that they recycle products; decrease the toxicity of waste sent to municipal disposal facilities, including potentially decreasing the amount of heavy metals in ash; educate consumers on disposal and purchasing practices; and get people to think about excess product packaging.

Weddle noted that EPA has and will continue to address HHW issues by offering conferences (there will be a fourth annual conference next year), studying waste streams, promoting voluntary efforts by industry to "design for disposal," assessing government procurement practices; and possibly through regulation such as requiring waste screening at municipal sites. He also referred to the policy statement on HHW developed by EPA. (See Appendix IV.)

APPENDIX I

Final Program

United States Environmental Protection Agency
Conference on
Household Hazardous Waste Management

Final Program **(Amended November 9, 1988)** **November 2-4, 1988**

Wednesday, November 2, 1988

8:00 am - 12 Noon	Registration
12 Noon - 1:00 pm	Lunch, with the speakers *(Staffordshire)*
1:00 pm - 5:00 pm	Plenary Session *(America South)*
1:00 pm - 1:45 pm	Moderator: Michael Deland, Regional Administrator, U.S. EPA Opening Remarks: Michael Deland, Regional Administrator, U.S. EPA **Keynote Address: EPA Perspective on Household Hazardous Waste Management** Sylvia Lowrance, U.S. EPA
1:45 pm - 2:45 pm	**History of Household Hazardous Waste Management** Dana Duxbury, Consultant to Center for Environmental Management, Tufts University
2:45 pm - 3:15 pm	Break
3:15 pm - 4:30 pm	**European Household Hazardous Waste Management Activities** Gerhard Vogel, Institute for Technology, Vienna, Austria **Canadian Household Hazardous Waste Management Activities** William Armstrong, Energy Pathways, Ottawa, Canada
4:30 pm - 5:15 pm	**The Chemical Specialties Manufacturers Association's Views on Household Hazardous Waste Management** Robert Etter, S.C. Johnson & Sons, Inc., Racine, WI **The National Paint & Coatings Association's Response to Household Hazardous Waste Management** Robert Foreman, NPCA, Washington, DC
5:30 pm - 6:30 pm	Reception, Cash Bar *(America North)*

Thursday, November 3, 1988

8:30 am - 5:00 pm Concurrent Sessions

8:30 am - 10:00 am Session A **How to Run a Collection Program** *(Essex West)*
(See also Sessions E, I and M)
Moderator: Ginger Lawrence

What is HHW?
Allen Maples, U.S. EPA

Actual and Potential Problems
David Galvin, Seattle Metro, WA

Management Options:
  Non-Collection
  Gina Purin, HESIS, Berkeley, CA

  Alternatives
  Kate Gage, Martha's Vineyard Refuse Disposal District, MA

Session B **1988 Special HHWM Programs** *(Essex North Center)*
Moderator: Judy Orttung

King County
Richard Conlin, Metrocenter YMCA, Seattle, WA

Industry Sponsored
James Conner, DOW Chemical U.S.A., Midland, MI

Presidential Award-Winning
Suzan Craik, County Extension Service, Chesterfield County, VA

Session C **Batteries** *(Essex East)*
Moderator: Dana Duxbury

What's the Problem?
Allen Hershkowitz, MRA, Elmsford, NY

Collection Options
Marie Steinwachs, HHWP, Springfield, MO

Management Options:
  Auto-Lead Acid
  Robert Steinwurtzel, Andrews & Kurth, Washington, DC

  Dry Cell
  Ray Balfour, Rayovac Corporation, Madison, WI
  Harry Fatkin, Polaroid Corporation, Cambridge, MA

Session D **Reduction and Other Management Options** *(St. George A & B)*
Moderator: Leslie Lewis

Alternatives
Kathy Betzhold, LWV, Delmar, NY

Recycling
Cass Goldwater, MA DEM, Boston, MA

European Programs
Gerhard Vogel, Institute for Technology, Vienna, Austria

Waste Exchanges and Hotlines
Ned Brooks, MPCA, St. Paul, MN

10:00 am - 10:30 am Break

10:30 am - 12 Noon	Session E	**How to Run a Collection Program** *(Essex West)* Moderator: Cass Goldwater Collection Programs: Planning Leslie Lewis, CT DEP, Hartford, CT Education Joan Dotson, LWV CA, Redlands, CA Steve Drew, CWM, San Jose, CA Education Materials Display Ginger Lawrence, Consultant to CEM, Tufts University
	Session F	**Funding** *(Essex North Center)* Moderator: Allen Maples State Sponsored, Florida Jan Kleman, DER, Tallahassee, FL State Permit Fee, Iowa Stuart Schmitz, DNR, Des Moines, IA Multiple Local Government Agencies, Seattle Richard Conlin, Metrocenter YMCA, Seattle, WA Industry Funding James Conner, DOW Chemical U.S.A., Midland, MI Solid Waste Tipping Fee Joseph Johnson, San Francisco, CA
	Session G	**Permanent Programs** *(Essex East)* Moderator: Ned Brooks Overview of Permanent Collections Diane Christensen, San Bernardino County, CA Case Studies: San Francisco—Tom Watkins, Sanitary Fill Company, San Francisco, CA Martha's Vineyard—Kate Gage, Martha's Vineyard, MA Michigan—Bob Ceru, Ingham County, MI Anchorage—Glenn Akins, Anchorage, AK Permanent Education Program Mary Catherwood, Consultant, Willmar, MN
	Session H	**Program Management** *(St. George A & B)* Moderator: Gina Purin A Total Integrated HHWM Program David Galvin, Seattle Metro, WA Local Planning: California—Judy Orttung, San Bernardino County, CA Washington—Bill Green, Department of Ecology, Olympia, WA Comprehensive Programs: Babylon, Long Island—Evan Liblit, Babylon, NY Minnesota—Susan Ridgley, MPCA, St. Paul, MN
12 Noon - 1:00 pm	Lunch, with the speakers *(Staffordshire)*	
1:15 pm - 1:45 pm	Live Demonstration of Incompatibles (Huntington Avenue driveway) Larry Sweetser, Sanitary Fill Company, San Francisco, CA	

2:00 pm - 3:15 pm	Session I	**How to Run a Collection Program** *(Essex West)* Moderator: Kate Gage Funding and Costs Dana Duxbury, Consultant to CEM, Tufts University Health and Safety Larry Sweetser, Sanitary Fill Company, San Francisco, CA Demonstration of Bulk vs. Lab Packing LeeAnn Merashoff, NE Solvents, North Andover, MA
	Session J	**Pesticides—Farm and Home** *(Essex East)* Moderator: Judy Orttung Overview of Pesticide Issues Gina Purin, HESIS, DHS, Berkeley, CA FIFRA—Robert Denny, U.S. EPA Collections—Farm and Home Susan Ridgley, MPCA, St. Paul, MN Other Management Options Jay Feldman, NCAMP, Washington, DC
	Session K	**Components of an HHWM Education Program** *(Essex North Center)* Moderator: Susan O'Keefe An Integrated Program Sondra Goodman, HHWP, Springfield, MO Collection Programs Joan Dotson, LWV CA, Redlands, CA Industry Program Elizabeth Garside, HPDC, Washington, DC HHWM in West Germany Joyce Rosenthal, CENYC, NY
	Session L	**Scientific Information** *(St. George A & B)* Moderator: Mel Hohman, EPA Region I, Boston, MA Data Linda Morse, Brown, Vence & Associates, San Francisco, CA Solid Waste Composition Douglas Wilson, University of Arizona, Tucson, AZ Landfills Robert Landreth, U.S. EPA Resource Recovery David Sussman, Ogden Projects, Inc., Alexandria, VA Water David Galvin, Seattle Metro, WA
3:15 pm - 3:40 pm	**Break**	

3:40 pm - 5:00 pm Session M **How to Run a Collection Program** *(Essex West)*

Moderator: David Kleckner

Liability
James Dougherty, U.S. EPA

RFPs and Contracts
LeeAnn Merashoff, NE Solvents, North Andover, MA

Special Waste Collection Programs
Susan Ridgley, MPCA, St. Paul, MN

Session N **Used Oil** *(Essex North Center)*

Moderator: Jim Noble, Principal Investigator, CEM, Tufts University

The EPA Program
Susan O'Keefe, U.S. EPA

State and Local Collection Programs
Rob Arner, Versar, Inc., Springfield, VA

BFI's Curbside Collection Program
Lynn Ingraham, BFI, San Jose, CA

Management Options:
  Reclaiming
  John Nolan, NORA, Reston, VA

  Rerefining
  George Booth, APR, Buffalo, NY

Session O **Paint** *(Essex East)*

Moderator: Gina Purin

Overview of Types of Paints
Ronald Child, California Products Corporation, Cambridge, MA

Industry's Response
Robert Foreman, NPCA, Washington, DC

Management Options
Diane Christensen, San Bernardino County, CA

Session P **Legislative** *(St. George A & B)*

Moderator: Joan Dotson

Overview of Current Laws, Rules, Regulations
Leslie Lewis, CT DEP, Hartford, CT

Need for Additional Laws:
  Industry Perspective
  Donald Lofty, Drackett Company, Cincinnati, OH

  Government Perspective
  State Rep. Barbara Gardner, MA Legislature, Holliston, MA

  Environmental Perspective
  Margie Alt, MASSPIRG, Boston, MA

Friday, November 4, 1988

8:30 am - 12 Noon	Plenary Session *(America South)*
8:30 am - 10:30 am	Moderator: Anthony Cortese, Director, CEM, Tufts University
8:30 am - 9:00 am	**Congressional Concerns**—Congressman Chester Atkins, 5th District, Lowell, MA
9:00 am - 9:30 am	**Liability**—James Dougherty, U.S. EPA
9:30 am - 10:00 am	**Contracts and RFPs**—Elizabeth McCormick, GSX, Columbia, SC
10:30 am - 10:45 am	Break
10:45 am - 12 Noon	**Panel on Future Trends in Household Hazardous Waste Management** Moderator: Dana Duxbury, Consultant to CEM, Tufts University David Allen, National Toxics Campaign, Boston, MA Dana Duxbury, Consultant to CEM, Tufts University T.K. Smith, DOW Chemical U.S.A., Midland, MI Howard Levenson, OTA, Washington, DC Bruce Weddle, U.S. EPA
12 Noon - 1:00 pm	Lunch, with the speakers *(Essex North)*

APPENDIX II

Final List of Speakers

FINAL LIST OF SPEAKERS

U. S. EPA

HOUSEHOLD HAZARDOUS WASTE MANAGEMENT CONFERENCE

Boston, Massachusetts

November 2-4, 1988

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APPENDIX III

Speakers' Biographical Sketches

"SPEAKERS' BIOGRAPHICAL SKETCHES"

U.S. EPA

HOUSEHOLD HAZARDOUS WASTE MANAGEMENT CONFERENCE

Boston, Massachusetts

November 2-4, 1988

Glenn Akins - is an environmental consultant with over 13 years of experience in natural resource and environmental projects in Alaska. He has been a private consultant in Alaska since 1982. Prior to that, Glenn served as the coordinator of the Alaska Coastal Management Program, as a division director and deputy commissioner of the Alaska Department of Environmental Conservation, and as the director of Environmental Services for DOWL Engineers. Specific projects Glenn has worked on recently include training and consulting on hazardous waste management; environmental audits; preparation of environmental assessments; permitting for the Greens Creek Mine, development of a local hazardous waste management program for the Municipality of Anchorage and City of Seattle, inventory of hazardous waste generated in Alaska; management of Part B permitting for the Anchorage hazardous waste facility; assistant manager of Alaska's hazardous waste facility siting study, and environmental permitting for Alaska Gold Company in Nome, under the new Alaska solid waste management regulations.

Akins has a B.A. in physical geography from the University of Minnesota and an M.S., also in physical geography, from Western Washington University.

David Allen - is director of the Preventive Environmental Protection Project of the National Toxics Campaign. He has worked on a number of projects having to do with preventive environmental policies, such as industrial waste reduction and toxics use reduction. He has worked as a consultant for Tufts University's Department of Urban and Environmental Planning, for state programs in Massachusetts and South Carolina, for the Congressional Office of Technology Assessment, and for various not-for-profit organizations. Allen holds degrees from Brandeis University, 1979, and the London School of Economics, 1981.

Margie Alt - is Toxics Program Director for MASSPIRG and oversees the organization's research, lobbying and organizing for their leading issue area. She has been with MASSPIRG since graduation from college in 1982, when she worked for passage of the Massachusetts Bottle Bill. Alt has directed their student organizing program, the Public Interest Lobby and the Citizen Outreach Program. Her B.A. in History is from Yale University.

W.D. (Bill) Armstrong - is President of Energy Pathways, Inc. Mr. Armstrong has been actively involved in the waste management field for a number of years. As a principal of Energy Pathways Inc., a firm specializing in environmental and energy-related technology transfer programs, Bill has been responsible for developing and implementing a number of innovative recycling and industrial waste management projects.

The company is currently responsible for managing and promoting "Papersave," the Canadian federal government's fine paper recycling program. The company has also been responsible for promoting "blue box" curbside recycling programs in Ottawa and surrounding cities. EPI's approach is to work closely with the program operators to produce promotional materials that focus on practical aspects of recycling behavior and program operation. Armstrong is working with the Ontario Waste Management Association (OWMA) to develop a series of publications on "The Business of Recycling". These will focus on the practical aspects of developing, implementing and promoting recycling programs for fine paper, old corrugated cardboard and household hazardous wastes as well as multi-material residential programs.

Bill is also well known for developing and directing "ON-SITE", a unique program that has helped more than 500 Canadian companies reduce and recycle hazardous wastes. The program places qualified, unemployed professionals in companies needing waste management assistance and uses a combination of federal employment funding and private sector contributions to pay project workers' salaries and provide technical support.

Mr. Robert Arner - an environmental scientist with Versar Inc., has hands-on experience in all aspects of used oil recycling, having dealt with numerous used oil technical, policy, and public education (technology transfer) issues. He has experience in national networking of civic groups, government officials, industry, and trade associations in promoting used oil recovery, and has worked to encourage recycling and educate the public on environmental issues. For the U.S. Environmental Protection Agency, Mr. Arner has developed used oil newsletters and other educational materials. Currently, he is co-authoring a community action "how to" manual for establishing used oil collection programs.

Mr. Arner has prior experience as the builder and plant manager of a used oil recycling facility. As such, he supervised the processing and final testing of used oil, reviewed permit applications, and supervised procurement and installation of plant equipment. He has also served as a consultant to the Washington, D.C. Energy Office, developing an issue paper entitled "Opportunities for Used Oil Recovery in the Nation's Capital".

Mr. Arner has a B.S. in Behavioral and Social Sciences from the University of Maryland.

Chester G. Atkins - is a United States Representative from the Massachusetts Fifth Congressional District, a district to the Northwest of Boston and home for many high-tech companies. A Democrat, Atkins is in his second term in the House. In one of his many committee assignments, he is on the Budget Committee's Task Force on Community and Natural Resources. Before going to Washington, Atkins spent the years 1973-1984 as a State Senator for the Middlesex and Worcester District, and prior to that, one term as a State Representative from the Middlesex District. A native of Concord, Massachusetts, he is a graduate of Antioch College.

Raymond L. Balfour - is Vice President, Rayovac Corporation, Madison, Wisconsin and Chairman, Dry Battery Section of the National Electrical Manufacturers Association. His educational background includes a B.S. in Civil Engineering, University of Nebraska, an M.S. in Engineering Mechanics, University of Nebraska, an L.L.B. from Cornell University, and an M.B.A. from Temple University.

Kathyrn W. Betzhold - is the Natural Resource Chair, League of Women Voters, Albany County, Albany, N.Y., a position she has held since 1984. She is the co-author of Household Hazards: A Guide to Detoxifying your Home. Betzhold has an M.S., nursing, from the University of Wisconsin and is a certified pediatric nurse practitioner.

Mr. George T. Booth, III - is director of external affairs for the BresLube Group, a subsidiary of Safety Kleen, the world's largest recycler of solvents and other petroleum products. He has been involved in the re-refining industry since his graduation from college. As President of Booth Oil Co., Inc. he was involved with all company administrative and technical functions. He is Chairman of American Society of Testing Materials, Section P. 02 on Fuel, Feedstocks, and Miscellaneous Products, Recycled Oil Subcommittee P.O. of Committee D-2 on Petroleum Products and Lubricants. Mr. Booth is President and Executive Director of the Association of Petroleum Re-refiners, the only trade association representing re-refiners in the United States. Mr. Booth has made various presentations on the subject of used oil collection and re-refining to such groups as the National Petroleum Refiners Association (NPRA), the National Recycling Coalition (NRC), the Convenient Automotive Services Institute (CASI) and the Association of Petroleum Re-refiners (APR). He is a 1971 graduate of Cornell University, with a B.A. in Economics.

Michael Borden - is President and CEO of Safety Specialists, an environmental, health and safety corporation. The company has been active in the field of Household Hazardous Waste programs, having conducted 75 programs in the last 6 years. Their experience has ranged from one day events to permanently operated sites. Currently, they are implementing a HHW operators training program which they developed.

Before coming to Safey Specialists in 1982 Borden spent many years in the timber management and land-use planning areas working both for the U.S. Forest Service and private industry.

Ned T. Brooks - is a pollution control specialist with the Minnesota Pollution Control Agency's Hazardous Waste Division in St. Paul, Minnesota. He has been working on household hazardous waste for the past 2 years. His current responsibilities include working with communities to establish on-going household hazardous waste collection and education programs, including telephone hotlines and waste exchanges. Brooks' past involvement with environmental issues includes work with private industry, trade associations and governments agencies.

Mary Catherwood - is a consultant who serves as the coordinator of the HHW Program for Kandiyohi County in Minnesota, a position she has held since the program began in December 1986. Initially conceived of as a 9-month model community program for household hazardous waste management, it has grown into a permanent program housing, an HHW permanent collection facility serving a two county area. She holds a B.A. in French from Rockford College, Rockford, Illinois and her professional background is in political, workplace and community organizing.

Robert Ceru - is the Supervisor for the Toxic Materials and Hazardous Waste Program within the Ingham County Health Department centered in Lansing, Michigan. He has been working with the County for 10 years, prior to which he worked for the Michigan Department of Natural Resources in the Office of Toxic Materials Control.

Ronald B. Child - is in charge of regulatory matters as Technical Director of California Products Corporation, a paint and tennis court coatings manufacturing company in Cambridge, Massachusetts. He has been with the firm for 13 years. Previously he was a laboratory manager with General Electric's paint operations in Chelsea, Massachusetts, and before that he spent 12 years as Technical Director for the Dampney Company, which specialized in heat-resistant coatings and was located in Everett, Massachusetts. His B.S. in Chemistry is from Northeastern University.

Diane Christensen - is presently working for the San Bernardino County Health Department as an Environmental Health Specialist. She is responsible for the coordination of the Household Hazardous Waste Program in the County of San Bernardino. Diane has a total of 10 years of experience in public health and environmental health issues. She has a B.A. in Health Science/Environmental Health from California State University, San Bernardino and is a registered Sanitarian in the State of California.

Richard Conlin - is the Project Director at Metrocenter YWCA, Seattle, Washington, a position he has held since 1984. He has coordinated Household Hazardous Waste Round-Ups in King County in May 1987, June and October 1988 and on Hood Canal (4 counties) in September 1988.

Conlin is the founder and former editor of the Northwest Conservation Act Report. He has worked with the Solar Lobby in Washington, D.C. and the Michigan Public Interest Research Group. He was the recipient of an Environmental Quality Award from the USEPA for his work on utility rate structures. Conlin served 2 terms as an elected County Commissioner in Ingham County, Michigan. He also brings an international perspective to the issues, having taught for 2 years at the Universities of Swaziland and Botswanna.

James R. Conner - is Waste Minimization Manager in the Environmental Services Department of the Michigan Division of Dow Chemical. He has been with Dow since 1968 where he has held various positions in manufacturing as well as heading a project to develop a new herbicide.

Conner has been in his current post since 1986 and is division representative for WRAP (Waste Reduction Always Pays), an awareness program directed at reducing the amount of environmental waste generated by the company's production facilities in the U.S.

His B.S. in Chemical Engineering is from the University of Denver.

Suzan E. Craik - is an extension agent with the Chesterfield County Extension Service in Chesterfield County, Virginia. She has worked with the Virginia Cooperative Extension Service since 1975 in the Community Resource Development program area. Currently, she is serving as Director of her county's litter prevention and recycling program and as Coordinator of the Household Hazardous Waste Disposal program. In 1988 the County was awarded 1st place in the "Take Pride in America" program.

Craik's educational background includes a B.S. in Community Development, Penn State University, and an M.S. in Community Development from the University of Missouri. She is doing doctoral work at Virginia Commonwealth University.

Michael Deland - is the Administrator of Region I, U.S. EPA, a position he has held for five years.

His prior experience includes running a candidate's congressional campaign, working in the EPA's legal department and working as a private environmental consultant. Deland is a graduate of Harvard College and Boston College Law School.

Robert L. Denny - is an Environmental Chemist. He has recently been selected for a detail working on developing a pesticide disposal policy for the Office of Pesticide Programs, U.S. EPA. Formerly he was a policy coordinator for the Pesticides Certification and Training Program at EPA. From 1981-1986 he was Executive Director of the Maine Board of Pesticide Control, based in Augusta, Maine. While Director, he developed several pioneering programs such as the return-for-deposit pesticide container disposal program and the first state wide obsolete and cancelled pesticide pick-up program. The latter program eliminated 25 tons of unusable materials from farms and households over a 3 year period. In 1985, Denny was given the "Environmentalist of the Year" award by the Maine affiliate of the National Wildlife Federation.

Joan Dotson - was, until recently, the Chair of the Hazardous Waste Committee for the League of Women Voters in Redlands, California. Her on-going responsibilities include the positions of Vice-Chair on the Planning Commission for the City of Redlands and Vice Chair for the San Bernardino County Hazardous Waste Management Plan Citizens Advisory Committee. She is a member of the Board of the League of California Cities and President of its Planning and Community Development Department.

James Dougherty - is currently the Section Chief of the Office of Enforcement and Compliance Monitoring, U.S. EPA.

Steve R. Drew - is a Regional Communications Manager for Chemical Waste Management, Inc.

He joined Chemical Waste Management, Inc. in March 1985, directing community relations, press relations andenvironmental affairs programs in the Western Region.

Mr. Drew is responsible for coordinating community relations activities with Chemical Waste Management's Environmental Remedial Action Division (ENRAC). As a consultant to companies utilizing Chemical Waste Management Services, Mr. Drew develops and implements press and local community relations programs for hazardous waste remedial cleanup projects.

Mr. Drew develops and implements public information and education programs for Household Hazardous Waste projects conducted by Chemical Waste Management's Technical Services Division.

Prior to joining Chemical Waste Management, Inc., Mr. Drew directed the Superfund Community Relations program for the U.S. EPA (Region 9 - San Francisco) and developed public information programs for EPA's Air, Water, Pesticides and Toxics Divisions. Mr. Drew's career in environmental public affairs exceeds 10 years.

Dana Duxbury - is an environmental consultant and founder of Dana Duxbury & Associates, which provides policy and educational consulting services on solid and hazardous waste management issues to government, industry and public interest groups. Before establishing her own firm, she was Senior Environmental Research Analyst at the Center for Environmental Management, Tufts University, where she was active in the area of waste reduction as well as household hazardous waste. She managed the 1986 and 1987 National Household Hazardous Waste Management Conferences in addition to organizing the 1988 Conference in Boston.

Duxbury brings to her professional experience 15 years of volunteer experience as the solid and hazardous waste specialist for the League of Women Voters of Massachusetts and the League of Women Voters of the United States. She holds a B.S. in Biology from Cornell University.

Robert Etter - is presently the Vice President - External Affairs, Research & Development for S.C. Johnson & Son, Inc., located in Racine, Wisconsin. Prior to this present position he worked for American Cyanamid as a Research Chemist. Mr. Etter's educational experience includes a Ph.D. in Organic Chemistry from Pennsylvania State University, a Senior Management Program in International Business and a program of the Harvard Business School in Vevey, Switzerland. He also serves on the Board of Directors of the Chemical Specialties Manufacturers Association.

Harry Fatkin - is the Director of Health, Safety, and Environmental Affairs for the Polaroid Corporation in Cambridge, Massachusetts, and has been there for the past 12 years. He is also responsible for community relations for the company. He serves on the Environmental Sciences Advisory Board of the University of Massachusetts and the Board of Advisors for the Educational Resource Center for Occupational Safety and Health at the Harvard School of Public Health. He is on the Board of Directors of the Charles River Watershed Association and has been a board member of the Synthetic Organic Chemicals Manufacturing Association.

He has served on advisory panels to the Congressional Office of Technology Assessmentand the National Governors' Association. He has chaired environmental committees for the New England Council and is on the editorial board of the Hazardous Waste and Hazardous Materials Journal. Mr. Fatkin holds degrees in engineering and in management from Villanova and Yale University.

Jay Feldman - is the National Coordinator for the National Coalition Against the Misuse of Pesticides. His main program activities focus on pesticide education, policy issues and alternatives and the legal aspects of pesticide misuse. Mr. Feldman has been involved with the Coalition since 1979 prior to which he worked in the public health areas. He has also contributed to the causes of rural America, working as a national advocate for people living in small towns or rural areas.

Robert D. Foreman - is the Associate Director of State Government Affairs for the National Paint and Coatings Association (NPCA), a Washington, D.C.-based trade association which represents approximately 700 chemical suppliers and paint manufacturers from across the United States.

Mr. Foreman has been with NPCA for nearly 6 years. He is principally responsible for directing the association's state legislative efforts on a variety of environmental, worker safety, and health issues. Prior to joining NPCA, Mr. Foreman served for 10 years as a Congressional aide in the U.S. House of Representatives. He was a Legislative Director to former Congressman James T. Broyhill of North Carolina. Mr. Foreman received a B.A. in business and political science from Ohio State University in 1973.

Kate Gage - is both Program Coordinator/Planner and Field Service Technician for the Harmful Household Materials Pilot Program for the Martha's Vineyard Refuse Disposal District. She has worked with community groups, town and state officials, and legislators to develop the pilot program for the on-going collection of harmful household chemicals. Hers is the first such effort in the Commonwealth.

Gage has served on the State's Small Quantity Generator Subcommittee (DEQE), the Household Hazardous Waste Task Force (DEM/DEQE) and she has presented numerous papers and talks. She has an M.F.A. from Pratt Institute and a B.A. from American University.

David Galvin - is a senior quality planner with Seattle Metro's Water Pollution Control Department, where he has been since 1979. Mr. Galvin has been involved in major research projects studying toxic and hazardous chemicals in Puget Sound, where they come from and how they might best be controlled. On the latter topic he has focused on sewage treatment and storm drainage systems. Source identification led him back up the pipes to households as well as industries and he pioneered studies of toxicants in consumer products and their safe disposal. The Seattle-area program for household hazardous waste management was one of the first in North America and continues to be a leader internationally.

Mr. Galvin holds a B.A. from Colby College in Waterville, Maine, where he majored in biology and environmental studies. In addition to previous jobs in land use planning and consulting, he spent a year in Western Europe as a Watson Fellow studying biological indicators of pollution, based at the British Museum (Natural History).

Barbara Gardner - is State Representative for the Massachusetts 8th Middlesex District. Currently, she is completing her first term in office and is running for re-election. In the House, she is a member of three committees - the Natural Resources and Agriculture Committee, the Energy Committee, and the Federal Financial Assistance Committee. Gardner also serves as a member of the Special Commission on Local Aid and the Commission on Growth and Change in the Commonwealth.

She initiated a tri-town household hazardous waste collection day in 1987 which won a state grant for the program. She is the founder and first president of the Holliston, MA League of Women Voters. Gardner is married and has three grown children.

Elizabeth Garside works for the firm of Ketchum Public Relations, in Washington, D.C., which represents the Chemical Specialties Manufacturers Association.

Cassandra Goldwater - is the Program Manager, Household Hazardous Waste, for the Massachusetts Department of Environmental Management.

Sondra Goodman - is the Director of the Household Hazardous Waste Project at Southwest Missouri State University in Springfield, Missouri. She was the founder of the HHWP, which is now in its second year. Goodman was one of the authors of HHWP's Guide To Hazardous Products Around The Home which was published earlier this year. She is a member of a number of committees including the Missouri Waste Control Coalition and the Midwest Waste Minimization Council Advisory Board.

Both her B.S. and M.S. are in Agronomy, the former from the University of Missouri - Columbia, the latter from the University of Nebraska - Lincoln.

William Green - is an Environmental Planner with the Solid and Hazardous Waste Program of the Department of Ecology in the State of Washington. His training as a chemist has involved him in research projects concerned with cancer and tuberculosis as well as work for a chemical formulator company.

A graduate of Brigham Young University in Chemistry, his M.S. is from the University of Washington.

Allen Hershkowitz - is a founding director of Municipal Recycling Associates, where he serves as president. He is a consultant to the United States Congressional Office of Technology Assessment and serves as an advisor to numerous municipalities throughout the U.S., the World Bank and numerous environmental organizations, including the Natural Resources Defense Council, INFORM, a New York City based environmental research organization and the Environmental Action Coalition, where he also serves as a Director of the Board.

Hershkowitz is Chair of the New York State Department of Environmental Conservation Commissioner's Advisory Board on Operating Requirements for Municipal Solid Waste Incinerators. In Manhattan, he chairs the Recycling subcommittee for the Manhattan Borough President. His Ph.D. in Political Economics is from the City University of New York . He has written extensively on energy and solid waste issues.

Lynn Ingraham - is with BFI (Browning, Ferris Industries) at their San Jose, California location.

Mr. Johnson - is Program Manager for Solid Waste within the San Francisco Office of the Chief Administrative Officer. His Program is responsible for solid waste management planning, the City's recycling efforts, county hazardous waste planning and various hazardous waste reduction projects.

Mr. Johnson previously headed the San Francisco Bureau of Energy Conservation. He is a licensed architect in the State of California and holds a B.A. from the University of Pennsylvania and and M.A. from the University of California at Berkeley.

Jan Kleman - is an Environmental Specialist with the Florida Department of Environmental Regulation, who has been working with hazardous waste management programs for 4 years. Kleman served as program administrator for the Florida Amnesty Days, a state-sponsored mobile collection program that, over a three and a half year period, provided each of Florida's 67 counties with a free hazardous waste collection.

Since the termination of the original Amnesty Days program in May 1987, Kleman has developed, updated and disseminated public awareness materials, guidance manuals and model local ordinances to local and regional governments. This information focuses on proper hazardous waste management and is designed to solve problems associated with hazardous waste. She has also provided local governments technical assistance in carrying out legislative mandates on hazardous waste management.

Kleman manages the Florida Local Hazardous Waste Collection Center Grants Program, in which 7 counties are currently participating. As the Grants Program has recently been re-authorized, she will be developing and administering all contracts for grants and funding for implementing the construction and operation of new facilities in at least 10 counties.

Robert E. Landreth - is Chief, Landfill Technology Section, at the EPA's Risk Reduction Engineering Laboratory in Cincinnati, Ohio. He has directed the technical and administrative aspects of complex extramural research projects on solid and hazardous waste pollution. He works in a number of areas to support U.S. EPA regulatory programs such as working closely with the Land Disposal Division in developing guidance on RCRA regulations. Landreth's B.S. and M.S. in Civil Engineering are from New Mexico State University.

Ginger Lawrence - is a research associate with Dana Duxbury & Associates. Previously, she worked at Tufts University's Center for Environmental Management where she helped to organize the 2nd National Conference on Household Hazardous Waste Management and compiled the summary report of that meeting. She has a B.A. in History from Wellesley College.

Howard Levenson - received his B.S. and M.S. degrees in Natural Resources Management from Humboldt State University, located behind the redwood curtain in northern California. He received his Ph. D. in Biology in 1982 from the University of Kansas.

In 1983, he was awarded a Congressional Science Fellowship with the U.S. Congress's Office of Technology Assessment (OTA). During the fellowship, he was assigned to the Oceans and Environment Program, where he helped analyze sources of groundwater contamination and their significance. He then became an Analyst in the program and has since become Senior Analyst and Project Director. In 1985-1987, he directed OTA's study on land-based pollution of marine environments, entitled Wastes in Marine Environments. The study was published in April 1987. He currently is directing OTA's study on municipal solid waste management.

Leslie Lewis - is the Citizens Participation Coordinator, Information and Education Unit at the Connecticut Department of Environmental Protection. She is the coordinator of the Connecticut Household Hazardous Waste Program which includes the administration of an $800,000 grant fund. She has a B.A. in English from the University of Vermont.

Evan Liblit - is the Commissioner of the Babylon, Long Island, New York Department of Environmental Control. From March 1986 until March 1988, when he became Commissioner, he was Acting Chief, Bureau of Source Reduction and Recycling, Division of Solid Waste, New York State Department of Environmental Conservation. From 1979 to 1986, he was an environmental protection specialist, U.S. EPA, New York Regional Office. Liblit's B.A. is from Adelphi University and his Masters of Urban/Regional Planning is from George Washington University.

Donald Lofty - is Vice President/Senior Counsel to the Drackett Company in Cincinnati, Ohio. He has been with Drackett since 1982. Last year he became the Chemical Specialties Manufacturers Association's Chairman of the State Legislative Affairs Committee which is responsible for developing and presenting the industry position on household hazardous waste. Before coming to Drackett, Lofty practiced law in Washington, D.C. His undergraduate degree is from Dartmouth College, his J.D. is from Georgetown University Law Center.

S.J. Lowrance - has extensive experience in EPA's hazardous waste program. She has served as Director, Office of Solid Waste, U.S. EPA since April 1988. In this capacity, she is responsible for the National Solid and Hazardous Waste Management Program, and for overseeing EPA's Waste Minimization Program.

Her previous experience included both staff and management positions in Superfund, hazardous waste enforcement, and RCRA. Prior to her current position, she served as Director, Characterization and Assessment Division, where she managed the land disposal restrictions program and hazardous and solid waste characterization. During the last 10 years, she has been responsible for a wide range of policy and program development in EPA. She has managed policy and technical guidance development for the national RCRA enforcement program; served as a Senior Advisor on the RCRA and CERCLA Enforcement Program and managed policy development for the Superfund program. Prior to her hazardous waste position, she worked in EPA's Office of Water. Before joining EPA she worked with several Washington-based associations. She holds a B.A. degree from the University of Michigan and J.D. from the Catholic University of America. She is a member of the Washington bar.

Allen Maples - is an Environmental Protection Specialist with EPA's Municipal Solid Waste Program. He has been with the Agency for 9 years working in the Office of Toxic Substances, 4 years in the RCRA Hazardous Waste Program, 3 years in the Superfund Community Relations Program and 2 years in the Municipal Solid Waste Program. In his current position, Maples' projects have focused on household hazardous waste and new standards for municipal landfills. Prior to his work with the EPA, Maples worked for the Department of Health in the State of Maryland.

Elizabeth McCormick - is employed by GSX Chemical Services, Inc., a commercial hazardous waste management company with 9 facilities in 7 states. GSX has conducted over 200 household hazardous waste collection projects.

McCormick received a B.S. in Distributed Science from the American University in Washington, D.C. and was formerly employed as research coordinator at a private toxicology laboratory in Maryland. She began work in hazardous waste management in 1979 as the Health and Safety officer with RAD Services, a predecessor to GSX Chemical Services.

She worked for several years as Manager of Compliance Programs, responsible for personnel training and for licensing and permitting of GSX transportation activities and storage/transfer facilities. She recently assumed the newly created position of Manager of Household Hazardous Waste.

She also serves as chair of the Chemical Waste Transportation Council, an industry group dedicated to safe transportation of hazardous wastes by highway and rail, and is the only woman on the Board of Directors of the National Solid Waste Management Association.

LeeAnn Merashoff - is Field Services Coordinator and Household Hazardous Waste Program Manager for Northeast Solvents. Since 1985, she has worked with over 150 New England communities to design and implement collection programs. She has worked with industrial hazardous waste management for over 5 years and is currently involved with developing innovative techniques for managing industrial and household hazardous wastes. She attended VPI & SU and the University of Maryland.

Linda Morse is Senior Environmental Planner with Brown, Vence & Associates, San Francisco, CA.

Morse has worked in the waste management field for over twelve years, including hazardous and solid waste plans and projects in the public and private sectors. She has recently managed preparation of Hazardous Waste Management Plans for three California counties, including collection detailed data on waste quantities, and development of management policies. She has also worked with the City of San Francisco in investigating hazardous waste management issues and implementing an ongoing household hazardous waste collection program.

John Nolan - is the President of the National Oil Recycling Association. He is from Reston, Virginia.

Susan O'Keefe - is an attorney advisor with EPA's Municipal Solid Waste Program, a position she has held since April, 1988. Prior to assuming this position O'Keefe was a special assistant to the Director, Office of Solid Waste. She has also worked in EPA's Waste Programs Enforcement Office on the development of corrective action regulations and policy for hazardous waste facilities. Before joining EPA in 1986 O'Keefe practiced environmental law in Washington, D.C. and Philadelphia, PA.

Judith M. Orttung - is an Environmental Health Specialist for the Department of Environmental Health, San Bernardino County, California. She is the program leader for developing the County Hazardous Waste Management Plan. Previously she coordinated the County Household Hazardous Waste Collection Program. She was the technical consultant for the 1987 publication entitled "Alternatives To Land Filling Household Toxics" put out by the Golden Empire Health Planning Center in Sacramento, CA. Orttung is a member of the Household Hazardous Waste Advisory Committee (Advisory to the California Waste Management Board).

She holds a B.S. in Chemistry from the University of Michigan, an M.S. from Stanford University, also in Chemistry, and a M.P.H. from Loma Linda University.

Gina Purin - is currently the coordinator of Outreach and Education for the Hazard Evaluation System and Information Services, a joint program sponsored by the California Department of Health Services and Industrial Relations.

She was the Director of Consumer Toxics at the Golden Empire Health Planning Center in Sacramento, California. Under an EPA grant, her work involved providing technical assistance to numerous communities on household hazardous waste collection and education. Purin coordinated the first household hazardous waste collection program in California. She is the co-author of 8 publications on consumer exposure to toxics and has a B.A. from the University of California at Davis.

Susan Ridgley - is supervisor, Special Wastes Unit, with the Minnesota Pollution Control Agency, Division of Solid & Hazardous Waste in St. Paul, Minnesota.

The Special Wastes Unit deals with "oddball" wastes: HHW, pesticides, used oil, batteries and other special projects.

Before becoming supervisor this year Ridgley was Household Hazardous Waste Project Coordinator for 1½ years and coordinated 14 collection projects. Prior work included project coordinator for Seattle Metro Household Hazardous Waste Collection Program in 1981-82. Susan has a B.S. in Environmental Science from Western Washington University.

Joyce Rosenthal - is assistant director of the Council on the Environment of New York City. CENYC is a non-profit citizens organization in the office of the Mayor and was founded in 1970.

Before she became assistant director in 1986 Rosenthal had worked for Greenpeace, America as its ocean-dumping coordinator, 1981-84, and from 1985-86 for the National Audebon Society's Science Division pursuing research on electrical utility forecasting and hydroelectrical energy for import.

She has a degree in Environmental Studies from the State University of New York, Binghamton.

Stu Schmitz is an environmental specialist with the Iowa Department of Natural Resources. He has been with the Department since October, 1984. Currently he is the lead worker in the Program and Grants unit of the Waste Management Authority Division of the Department of Natural Resources. His responsibilities include coordinating the Grant Program for landfill alternatives and the Household Hazardous Waste Program. He was previously involved with writing permits for sanitary disposal projects in the Solid waste section of his department.

He has Chemical Engineering degrees, a B.A. and an M.S., from Iowa State University.

T. K. (Tom) Smith - is director of Government and Public Affairs for The Dow Chemical Company, Midland, Michigan. Smith is a Dow Chemical U.S.A. vice president and a member of the Dow U.S.A. management committee. Smith joined Dow in 1962 and served in several marketing capacities, including product sales manager and district sales manager. In 1974, he became financial assistant for Investor Relations in the Corporate Financial Department. He was named product group sales manager for Styrenes in 1976 and business manager in 1977.

He moved to Dow Chemical Pacific in Hong Kong in 1979 as vice president and director of Marketing for Dow Pacific. Smith became vice president for Specialty Products and Services for Dow Pacific in 1982. When Dow U.S.A. commercial operations were realigned in August 1983, he became general manager of the Urethanes Department in the Industrial Specialties and Services Group, Midland. He was named to his new position as director of Government and Public Affairs for Dow and a Dow U.S.A. vice president in February 1986.

Smith holds a B.S. in Chemical Engineering from Cornell University.

Marie Steinwachs - is Assistant Director of the Household Hazardous Waste project, Southwest Missouri State University, Springfield, Missouri. She has been involved in the development of the HHWP since its inception in 1987. Steinwachs' services on the Solid Waste Task Force for the City of Springfield, served as chair of the recycling subcommittee for the ad hoc Citizens Advisory Committee on Solid Waste, Springfield, MO, is a member of the Missouri Waste Control Coalition and also the National Recycling Coalition.

Robert Steinwurtzel - an attorney with the Washington law firm of Andrew & Kurth, is representing the secondary lead Smelters Association. He has been in private practice since 1980, and with his present firm since May, 1988. Steinwurtzel has had experience in government working first at the U.S. Department of the Interior and next in the office of Water Enforcement, U.S. EPA.

His undergraduate degree is from Franklin & Marshall College and his J.D. from George Washington University.

David Sussman - is a Vice President for Environmental Affairs for Ogden Martin Systems and has been involved with resource recovery for the past 17 years. His responsibilities at Ogden focus on all of the environmental issues surrounding waste management. As such he is constantly interfacing with Federal and State legislators and regulators, industry associations, and the public.

Prior to joining Ogden, David was Manager of the Waste Combustion program at the U.S. EPA, where he was involved with both technology development and in providing funding to assist many of the communities now building waste-to-energy plants.

He is very active in a number of professional societies and chairs committees involved with waste combustion and environment. Mr. Sussman is a retired Air Force officer, whose last assignment launched him into the "garbage business".

Larry Sweetser - is the Environmental Compliance Program Manager for Norcal Solid Waste Systems, Inc. His primary responsibility is to develop programs to prevent hazardous waste from being delivered to the landfill. One aspect of the Waste Acceptance Control Program is the implementation and management of the Household Hazardous Waste Collection Facility for the City & County of San Francisco. This dedicated facility and its full-time staff became operational on January 21, 1988. Mr. Sweetser has a M.A. degree in Environmental Management from the University of San Francisco.

Gerhard Vogel - is an assistant professor for technology and commodity science with specialization in the field of waste management at the University of Economics in Vienna, Austria. He has had extensive experience in the field of waste management, ranging from the development of waste management programs for the 3 largest cities in Austria to participation in international organizations such as serving as the Austrian delegate, Waste Management Policy Group, Environment Committee, OEDC, Paris; member of the International Solid Waste Association's working group on hazardous waste; and speaking at the 2nd National Household Hazardous Waste Management's Conference in San Diego, November 1987.

Tom Watkins - California Environmental Compliance Program Specialist with Sanitary Fill Company in San Francisco. At Sanitary Fill he is Operations Supervisor for their household Hazardous Waste collection facility. Prior to taking this assignment he worked for 3 years with Zero Waste Systems in Oakland, CA as a Senior Hazardous Waste Chemist.

A 1980 graduate of U.C. San Diego, in Chemical Physics, Watkins is currently working toward a certificate in hazardous waste management at U.C. Davis.

Bruce R. Weddle - is the Director, Municipal Solid Waste Program, U.S. EPA, a position he assumed in 1988. His responsibilities, in addition to the overall management of the program, include development of the Solid Waste Disposal Criteria, municipal combustor ash and guidance and policy development in all areas of municipal waste management (resource recovery, disposal, planning, etc.)

Weddle has been with the agency since 1970. His immediate prior post was as Director, Permits and State Programs Division. His B.S. in Mechanical Engineering is from Clarkson College of Technology and his M.B.A. is from Xavier University, Cincinnati, Ohio.

Douglas C. Wilson - received his education at the University of Arizona (B.A. 1982, M.A. 1985) and is currently a Ph.D. candidate in the Department of Anthropology. Since 1984, Wilson has worked for the University of Arizona's Garbage Project as Senior Research Associate for Household Hazardous Waste Studies. Wilson has been a co-director of Household Hazardous Waste Studies in Tucson and Phoenix, Arizona, Marin County, California, and New Orleans, Louisiana and has coordinated the collection of Household Hazardous Wastes Data from Landfill studies conducted in Fremont, California, Tucson, Arizona, Sunnyvale, California and Chicago, Illinois. Wilson has co-authored numerous reports on Household Hazardous Wastes for the EPA, NSF and public and private organizations. Wilson's interests include solid wastes characterization, landfill excavation and study, modern material culture studies, and archaeology.

APPENDIX IV

Clarification of Issues Pertaining to Household Hazardous Waste Collection Programs

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 1 1988

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Clarification of Issues Pertaining to Household Hazardous Waste Collection Programs

FROM: J. Winston Porter
Assistant Administrator for Solid Waste and Emergency Response

TO: Waste Management Division Directors,
Regions I-X

As you know, the Agency enthusiastically supports household hazardous waste (HHW) collection and management programs. As part of this support, EPA has sponsored annual HHW conferences since 1986. The first collection programs began in 1981. As of October 1988, over 1300 collection programs have been set up in 44 States and more programs are being planned all the time. EPA believes these programs are important because they: (1) promote citizen awareness regarding proper handling of HHW; (2) reduce the amount of HHW in the municipal solid waste stream which ultimately is taken to municipal waste combustors or landfills; (3) limit the amount of HHW which is dumped down a drain and ultimately discharged to a publicly-owned treatment works (POTW), or is dumped indiscriminately; (4) remove a greater amount of HHW from the home, thereby reducing potential safety hazards; and (5) help to reduce the risk of injuries to sanitation workers.

Several issues have been raised pertaining to HHW collection programs. These issues include the liability of collection program sponsors under the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); EPA's recommendations regarding the management of HHW; and the regulatory status of HHW that contains dioxin.

This memorandum clarifies our position on these issues. You should note, however, that State positions may vary; the State agency should be contacted for details on the State's policies or regulations regarding HHW.

1. What does EPA recommend regarding management of HHW collected in HHW collection programs?

As you know, all household wastes are exempt by definition from the Federal hazardous waste regulations promulgated under Subtitle C of RCRA. Section 261.4(b)(1) unconditionally exempts household wastes, including HHW, from the Subtitle C regulations even when accumulated in large quantities. This exemption also applies to HHW collected during an HHW collection program. However, when household wastes are mixed with hazardous wastes from small quantity generators, this resulting mixture is subject to the small quantity generator rules in Section 261.5. For this reason, sponsors of HHW collection programs should be careful to limit the participation in their programs to households to avoid the possibility of receiving regulated hazardous wastes from commercial or industrial sources and triggering all or some of the Subtitle C controls on this waste.

Household waste, including HHW, is subject to the regulations under Subtitle D of RCRA. The current Subtitle D regulations governing the disposal of any solid waste are the "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR Part 257). These regulations are general environmental performance standards that are implemented by the States. On August 30, 1988 (see 53 FR 33314) EPA proposed new rules for municipal solid waste landfills at 40 CFR Part 258. HHW can legally be disposed in any solid waste disposal facility, including a municipal solid waste landfill, that is in compliance with the existing "Criteria" and State and local requirements.

Although HHW is exempt from the Federal RCRA Subtitle C hazardous waste regulations, EPA recommends that sponsors of HHW collection programs manage the collected HHW as a hazardous waste. When a community has already gone to the effort and expense of collecting these materials, Subtitle C controls provide a greater level of environmental protection. In selecting a management option, the Agency recommends that program sponsors follow the waste management hierarchy of:

(1) Reusing and recycling as much waste as possible;
(2) Treating waste in a hazardous waste treatment facility; and, finally,
(3) Disposing of remaining waste in a hazardous waste landfill.[1]

The Agency also recommends the use of licensed hazardous waste transporters who will properly identify, label, manifest, and transport the collected wastes for recycling, treatment, or disposal. Although sponsors are not required to manage HHW as a hazardous waste, it is clear from seeing the programs in action, that, in fact, sponsors usually contract with hazardous waste management professionals to run the programs. These contractors generally manage the HHW as a hazardous waste and usually make efforts to reuse and recycle the waste.

2. What is the regulatory status of HHW that contains dioxin?

As stated above, HHW is unconditionally exempt from Federal RCRA Subtitle C regulation. This exemption includes HHW that contains dioxin, such as pesticides. Like any household waste, HHW that contains dioxin must be disposed of in accordance with EPA's rules under Subtitle D of RCRA.

The RCRA land disposal restrictions rule issued November 8, 1986, applies only to those dioxin-bearing wastes that are specifically listed as hazardous wastes under Subtitle C of RCRA. Therefore, this rule does not apply to any HHW and does not prohibit hazardous waste land disposal facilities from receiving any HHW, even those potentially containing dioxin.[2] Although dioxin-containing HHW are exempt from EPA's land disposal restrictions rule, we understand that, due to public perception concerns, some Subtitle C hazardous waste management facilities currently do not accept dioxin-bearing HHW. EPA will explore options with State and local governments so that a solution to this problem can be found. For example, we are looking at ways to encourage the waste management industry to reconsider their position and accept these wastes. Some communities have chosen to temporarily store this dioxin-bearing HHW until a more permanent management option can be found.

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[1] To the extent that non-hazardous liquids are not containerized in accordance with Sections 40 CFR 264.314(d), 265.314(c), 264.316, and 265.316, such liquids are subject to the non-hazardous liquids restrictions set forth at Sections 264.314(e) and 265.314(f).

[2] Likewise, the land disposal restrictions do not apply to any other HHW.

3. What liability do HHW collection programs sponsors have under Subtitle C of RCRA?

As stated above, Section 261.4(b)(1), exempts household wastes, including HHW, from the Federal Subtitle C regulations. As a result, handlers of HHW are not potentially liable under Subtitle C of RCRA for failure to follow the regulations and are not required to manage collected HHW in Subtitle C hazardous waste management facilities. As previously mentioned, however, EPA recommends that this waste be handled as a Subtitle C hazardous waste.

4. What liability do sponsors of HHW collection programs have under CERCLA?

CERCLA does not contain an exclusion from liability for household waste or an exclusion based on the amount of waste generated. Any waste that qualifies as a hazardous substance under CERCLA is subject to the liability provisions of Section 107. Hazardous substances are defined under Section 101(14) and designated under Section 102(a) of CERCLA. HHW may qualify as a "hazardous substance" if it contains any substance listed in Table 302.4 of 40 CFR Part 302. If a household waste contains a substance that is covered under these CERCLA sections (whether or not it is a RCRA hazardous waste), potential CERCLA liability exists.

Communities should recognize that potential liability under CERCLA applies regardless of whether the HHW was picked up as part of a community's routine waste collection service and disposed of in a municipal waste landfill (RCRA Subtitle D) or if the HHW was gathered as part of a special collection program and taken to a hazardous waste landfill (RCRA Subtitle C). The additional safeguards provided by HHW collection and Subtitle C management may reduce the likelihood of environmental and human health impacts and, therefore, may also reduce potential CERCLA liability.

I hope this information will assist you in addressing questions regarding HHW collection and management programs. We are providing copies of this memorandum to States and the major waste management trade associations. I request that you make this information available to any other interested parties in your Region. If you require additional information or clarification on these issues, please contact Allen Maples of the Municipal Solid Waste Program at (202) 382-4683.

cc: State Solid and Hazardous Waste Directors
Bryan W. Dixon, ASTSWMO
Dana Duxbury, Consultant to Tufts University, CEM
William Forester, APWA
H. Lanier Hickman, GRCDA
Sheila Prindiville, NSWMA
Hazardous Waste Branch Chiefs, Regions I-X
Regional Subtitle D Coordinators, Regions I-X

APPENDIX V

The National Listing of Household Hazardous Waste Collection Programs

THE NATIONAL LISTING OF

HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS

1981-1988 (As of October 20th 1988)

The information contained in the following document has been collected and assembled by Dana Duxbury & Associates for the Center for Environmental Management at Tufts University. The purpose of this on-going list is to provide basic information on household hazardous waste collection programs nationwide, and to serve as a resource for identifying program contacts. Individual program contacts may be able to provide more detailed information than is supplied in this document.

This listing includes all of the programs held from 1981 - 1988 that could be identified. Data for programs held recently, or still to be held this year, will need to be added. Please use the attached list, or complete a program form to supply us with the necessary additions or corrections.

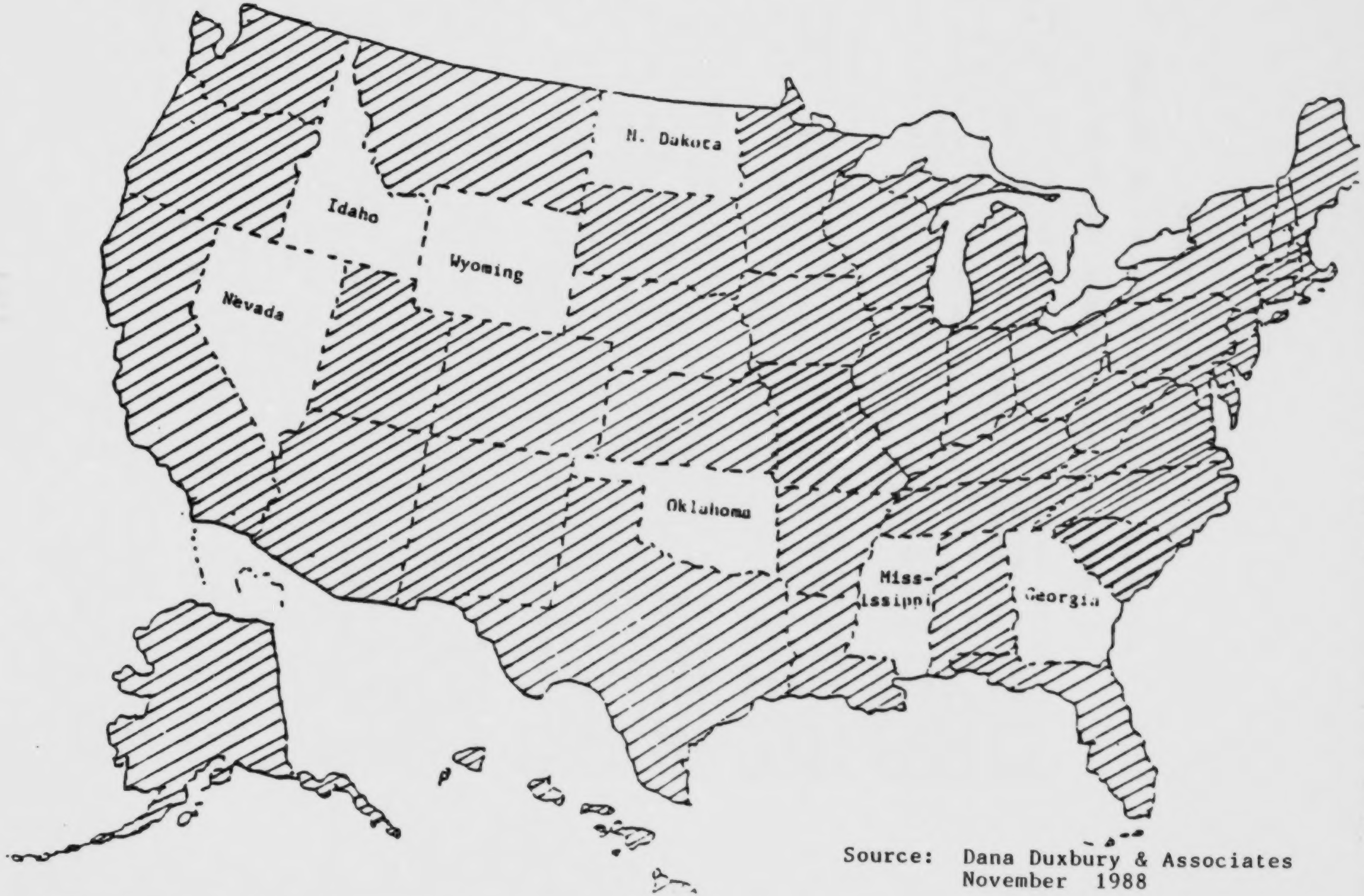
Since there is no central directory or national reporting requirement we had to apply a variety of methods to obtain necessary data. We utilized various project sponsor materials, state and municipal information, personal contacts, reporting forms, and other information sources in an attempt to be as complete as possible. We make no pretense that this is the definitive listing. In recognizing the magnitude of this task, we would appreciate your input in keeping the listings current as well as in correcting any inaccuracies.

Programs are listed in chronological order. Where information was available, we specified whether a program handled "paint only," "pesticides only," "oil only," was a mobile collection program, or was at a permanent/fixed site. A permanent program was defined as one that is held at least once a month. We considered a program as one collection program if it was held on the same day, though at multiple sites. If a program was held more than once during the year, this will be indicated by the frequency it appears in the chronological listing. Information on costs, amount of waste collected, and number of participants is presented in the units provided to us by our sources. Although we list a single program sponsor, some programs have multiple sponsors. These distinctions have been applied to the 1988 data and may not be applicable to the 1981 - 87 data.

Please send any household hazardous waste collection program information to Dana Duxbury & Associates, Corporate Office Centers, Third Floor, 16 Haverhill Street, Andover, MA 01810, (508) 470-3044.

▨ STATES IN WHICH HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS HAVE BEEN HELD

1981 - 1988


N. Dakota
Idaho
Wyoming
Nevada
Oklahoma
Miss-
issippi
Georgia

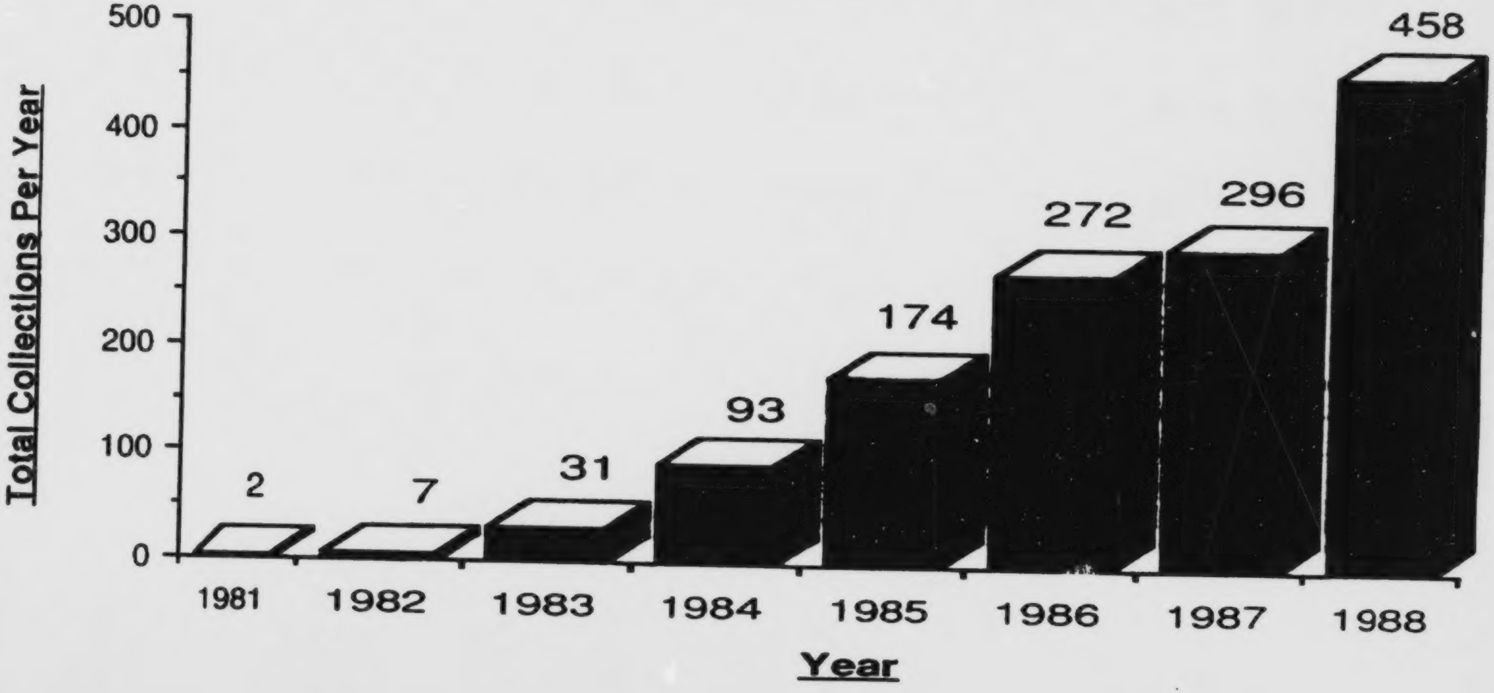
Source: Dana Duxbury & Associates
November 1988

HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS TOTALED BY YEAR

State	1981	1982	1983	1984	1985	1986	1987	1988	Total
Alabama					1				1
Alaska			2	3	4	7	2	6	24
Arizona							1	1	2
Arkansas							1		1
California		1	5	12	37	28	80	95	258
Colorado				4	1				5
Connecticut				1	9	25	24	38	97
Deleware							1		1
Florida				21	22	16	13	17	89
Georgia									0
Hawaii						1	1	2	4
Idaho									0
Illinois							1	6	7
Indiana					2	1	2	5	10
Iowa							2	3	5
Kansas						3			3
Kentucky	2		1						3
Louisiana					1	1	1	2	5
Maine				1		1			2
Maryland					1		1	3	5
Massachusetts		1	14	31	33	78	51	101	309
Michigan				2	8	14	10	20	54
Minnesota					6	10	9	28	53
Mississippi									0
Missouri								1	1
Montana				1					1
Nebraska					3		1	3	7
Nevada									0
New Hampshire				1	4	11	20	17	53
New Jersey					8	7	3	11	29
New Mexico					1				1
New York		1	4	2	8	21	28	44	108
North Carolina					2				2
North Dakota									0
Ohio				2		1		1	4
Oklahoma									0
Oregon		1	1	1		2	2	3	10
Pennsylvania					1	1	2	5	9
Rhode Island				5	4	4	7	5	25
South Carolina								1	1
South Dakota						1			1
Tennessee						1			1
Texas						6	2	5	13
Utah						2			2
Vermont				1	2	5	3	2	13
Virginia					1	3	7	14	25
Washington		3	4	3	8	12	12	12	54
West Virginia					1		1		2
Wisconsin				2	6	9	9	7	33
Wyoming									
Total by Year	2	7	31	93	174	272	296	458	1333
Total States	1	5	7	16	25	28	29	29	43

Source: Dana Duxbury & Associates, January 1989

Total # of Collection Programs Per Year



HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
								0.00		
								0.00		
Alabama	Emelle	4/20 /85	Chem Waste Mgt	Gordon Kenne	(205)652-6721	Chem Waste Mgt	(205)652-6721	0.00		30
Alaska	Anchorage	5/09 /83	DEC	Glenn Miller	(907)465-2666	Chem Securities		50000.00	5500 gals	200+
Alaska	Fairbanks	5/16 /83	DEC	Glenn Miller	(907)465-2666	Chem Waste Mgt	(312)572-8800	0.00		
Alaska	Anchorage	4Spr /84	DEC	Glenn Miller	(907)465-2666	NW Env Srvcs	(206)762-1190	110000.00	9075 gals	
Alaska	Fairbanks	5/14 /84	DEC	Glenn Miller	(907)465-2666	NW Env Srvcs	(206)762-1190	0.00		
Alaska	Juneau	5/19 /84	DEC	Glenn Miller	(907)465-2666	NW Env Srvcs	(206)762-1190	0.00		
Alaska	Fairbanks	4Spr /85	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00	4235 gals	
Alaska	Anchorage	4Spr /85	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	150000.00	18150 gals	
Alaska	Kenai	4Spr /85	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00	3740 gals	
Alaska	Juneau	4Spr /85	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00	3300 gals	
Alaska	Fairbanks	4Spr /86	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00		
Alaska	Anchorage	4Spr /86	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	80000.00	14880 gals	300
Alaska	Kenai	4Spr /86	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00		
Alaska	Homer	4Spr /86	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00		
Alaska	Seward	4Spr /86	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00		
Alaska	Juneau	4Spr /86	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00		
Alaska	Ketchekan	4Spr /86	DEC	Glenn Miller	(907)465-2666	Crosby & Overton	(213)432-5447	0.00		
Alaska	Juneau	4Spr /87	DEC	Glenn Miller	(907)465-2666	NW Env. Srvcs.	(206)762-1190	100000.00	51 drums	
Alaska	Anchorage	4Spr /87	DEC	Glenn Miller	(907)465-2666	NW Env. Srvcs.	(206)762-1160	0.00	113 drums	
Alaska	Fairbanks (2 days)	08/02 /88	DEC and towns	Glen Miller	(907)465-2666	NW Env. Services		0.00		
Alaska	Anchorage*	11/ /88	City	Jim Sweeney	(907)261-5223			0.00		
Alaska	Seward (2 days)	5/12 /88	DEC and towns	Glen Miller	(907)465-2666	NW Env. Services		0.00		
Alaska	Homer (2 days)	5/18 /88	assistd towns	Glen Miller	(907)465-2666	Nw Env. Services		0.00		
Alaska	Soldotna (2 days)	5/26 /88	DEC and town	Glen Miller	(907)465-2666	NW Env. Services		0.00		
Alaska	Ketchekan (2 days)	6/08 /88	DEC and towns	Glen Miller	(907)465-2666	NW Env. Services		0.00		
Arizona	Tucson (2 days)	02/27 /87	Waste Water Mmgt.	Lois Kulakowski	(602)881-3939	SSX	(800)251-1227	70000.00	4400 gals	350
Arizona	Tucson (2 days)	11/19 /88	City	Katherine Flagg	(602)791-5414	Disposal Control	602-268-0999	0.00		
Arkansas	Little Rock	6/13 /87	LWV of Arkansas	Jeanne Jackson	(501)376-7780	ENSCO	(501)223-4100	13875.00	7000 lbs	200
California	Sacramento	10 /82	GEHPC,County	Gina Purin	(916)731-5050			14000.00	2970 gals	250
California	Davis	4Spr /83	Public Works	J.B. Holmquist	(916)666-8775			0.00		
California	Woodland	4Spr /83	Public Works	J.B. Holmquist	(916)666-8775			0.00		
California	W. Sacramento	4Spr /83	Public Works	J.B. Holmquist	(916)666-8775			0.00		
California	Palo Alto	10/29 /83	Water Qual Cntrl	Peter Burnes	(415)329-2117	Chem Waste Mgt		3900.00	1650 gals	70
California	Palo Alto	11/05 /83	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	Redlands	3/24 /84	LWV	Joan Dotson	(714)793-1164			4990.00	165 gals	30
California	San Bernardino	3/24 /84	Env Hlth Srvcs	Steve Van Stock	(714)383-3394			0.00		
California	Sacramento	4 /84	GEHPC,County	Gina Purin	(916)731-5050			25000.00	9075 gals	900
California	San Diego	4Spr /84	Env Hlth Coalition	Diane Takvorian	(619)235-0281			57000.00	13826 gals	290
California	San Diego	6 /84	Env Hlth Coalition	Diane Takvorian	(619)235-0281			0.00		
California	Palo Alto	6/02 /84	Water Qual Cntrl	Peter Burnes	(415)329-2117	Chem Waste Mgt		6100.00	3025 gals	80
California	Palo Alto	6/09 /84	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	Oakland	9/29 /84	LWV,DHS,City	Joan Patton	(415)775-8683			0.00		
California	Palo Alto	10/27 /84	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	Irvine	10/27 /84	Public Works	Phil Hersch	(714)660-3721			0.00		
California	San Mateo	10/27 /84	County	Judy Henley	(415)363-4305			0.00		
California	Palo Alto	11/03 /84	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	Victorville	1/12 /85	Env Hlth Srvcs,Cnty	Doug Frazier	(408)986-1111			0.00		
California	San Bernardino*	2 /85	Cnty: San Bernardino	Judy Orttung	(714)387-4629	Disp Cntrl Srvcs		0.00		
California	Fontana*	2 /85	Cnty: San Bernardino	Judy Orttung	(714)387-4629	Disp Cntrl Srvcs		0.00		
California	Albany	2/24 /85	City of Albany	William Haden	(415)528-5710			0.00		
California	Contra Costa	4/13 /85	Cnty HW Task Force	Kathleen Nimr	(415)228-5746			0.00		
California	Richmond	4/13 /85	County	Kirsten Ritchie	(415)671-4295			0.00		
California	Santa Rosa	4/15 /85	Empire Waste Mgt Co	Dennis McGee	(707)585-0291			0.00		

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HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
California	Huntington Beach	4/20 /85	County,LWV	Frank Bowerman	(213)834-8892			0.00		
California	Cupertino	4/27 /85	City of Cupertino	K. Blackburn	(408)252-4505			0.00		
California	Mountain View	5/11 /85	City of Mt. View	Frank Moe	(415)966-6365			0.00		
California	Mountain View	5/18 /85	City of Mt. View	Frank Moe	(415)966-6365			0.00		
California	Milpitas	5/18 /85	City of Milpitas	Starla Jerome				0.00		
California	Sacramento	6 /85	GEHPC,County	Gina Purin	(916)731-5050			0.00		
California	Palo Alto	6/08 /85	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	Santa Rosa	6/29 /85	Empire Waste Mgt Co	Dennis McGee	(707)585-0291			0.00		
California	San Francisco	8/03 /85	Sanitary Fill Co.	Larry Sweetser	(415)468-2442			0.00		
California	Santa Rosa	8/17 /85	Empire Environmental	Dennis McGee	(707)585-0291			0.00		
California	Union City	9/14 /85	Oakland Scavenger	John Sheehan	(415)465-2911			0.00		
California	Sacramento	9/21 /85	GEHPC,County	Gina Purin	(916)731-5050			0.00		
California	Fremont	9/21 /85	Oakland Scavenger	John Sheehan	(415)465-2911			0.00		
California	Sacramento	9/28 /85	GEHPC,County	Gina Purin	(916)731-5050			0.00		
California	Hayward	9/28 /85	Safety Specialists	Doug Frazier	(408)988-1111			0.00		
California	Santa Cruz	9/28 /85	Safety Specialists	Doug Frazier	(408)988-1111			0.00		
California	Santa Rosa	9/28 /85	Empire Waste Mgt Co	Dennis McGee	(707)585-0291			0.00		
California	Felton	10/05 /85	Safety Specialists	Doug Frazier	(408)988-1111			0.00		
California	Santa Cruz	10/05 /85	Safety Specialists	Doug Frazier	(408)988-1111			0.00		
California	Santa Cruz	10/12 /85	Safety Specialists	Doug Frazier	(408)988-1111			0.00		
California	Watsonville	10/12 /85	Safety Specialists	Doug Frazier	(408)988-1111			0.00		
California	Woodland	10/12 /85	Empire Environmental	Dennis McGee	(707)585-0291			0.00		
California	Palo Alto	10/18 /85	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	Sunnyvale	10/19 /85						0.00		
California	Salinas	10/26 /85	Safety Spec,Cnty	Arylene Willitis	(408)759-7382			0.00		
California	Palo Alto	11/02 /85	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	San Mateo	11/02 /85	San Mateo Co.	Peter Burnes	(415)329-2117			0.00		
California	Laguna Niguel	11/02 /85	Orange Co.					0.00		
California	Santa Rosa	11/16 /85	Empire Waste Mgt Co	Dennis McGee	(707)585-0291			0.00		
California	Palo Alto	6/1/ /85	Water Qual. Control	Peter Burns	(415)329-2117			0.00		
California	San Bernardino*	/86	San Bernardino Cnty	Riger Birdsel				0.00		
California	Fontanna*	/86	San Bernardino Cnty					0.00		
California	Santa Rosa	1/11 /86	Empire Waste Mgt	Dennis McGee	(707)585-0291			0.00		
California	San Diego	2 /86	Cnty Pub Hlth Srvce	Donald Ramres		Approp Techs II		38185.00	5225 gals	226
California	Ontario	4/12 /86	San Bernardino Cnty	Kenneth Jeske				0.00		
California	Rancho Cucamonga	4/12 /86	San Bernardino Cnty	Kenneth Jeske				0.00		
California	Chino	4/19 /86	San Bernardino Cnty	Kenneth Jeske				0.00		
California	Upland	4/19 /86	San Bernardino Cnty	Kenneth Jeske				0.00		
California	Montclair	4/19 /86	San Bernardino Cnty	Kenneth Jeske				0.00		
California	Santa Ana	4/19 /86	Orange Co.	Sandi Schafer	(714)834-8872			0.00		
California	Santa Rosa	4/21 /86	Empire Environmental	Dennis McGee	(707)585-0291			0.00		
California	Victorville	4/24 /86	San Bernardino Co	Kenneth Jeske				0.00		
California	Palo Alto	4/26 /86	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	S. San Francisco	4/26 /86	San Mateo Cnty	Judy Henley				0.00		
California	San Carlos	4/26 /86	San Mateo Cnty	Judy Henley				0.00		
California	Santa Monica	5/31 /86						0.00		
California	Palo Alto	6/07 /86	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	San Rafael	6/07 /86	LWV	Kathy Gueldner				0.00		
California	Santa Rosa	6/14 /86	Empire Environmental	Dennis McGee	(707)585-0291			0.00		
California	Santa Rosa	8/09 /86	Empire Environmental	Dennis McGee	(707)585-0291			0.00		
California	Palo Alto	8/30 /86	Water Qual Cntrl	Peter Burnes	(415)329-2117			0.00		
California	Santa Rosa	10/11 /86	Empire Environmental	Dennis McGee	(707)585-0291			0.00		
California	Santa Rosa	10/13 /86	Empire Environmental	Dennis McGee	(707)585-0291			0.00		
California	Sunnyvale*	10/19 /86	City of Sunnvale	Gene Wilroth	(408)730-7267	IT Transport. Corp.	(408)263-7250	11657.00	2,475gal	103

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
California	San Diego (7)	12 /86	San Diego Cnty	David Harris	(619)235-0281	Approp Tech II		0.00		
California	Santa Rosa	12/13 /86	Empire Waste Mgt	Dennis McGee	(707)585-0291			0.00		
California	San Marcos	12/13 /86	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		140
California	Morgan Hill City	5/ /86	City of Morgan Hill	Susan Kohlmanmaner	(408)779-7231	Safety Specialists	(408)988-1111	0.00		
California	Monterey Cnty*	/87	Cnty					0.00		
California	San Bernardno*	/87	San Bernardino Cnty					0.00		
California	Fontanna*	/87	San Bernardino Cnty					0.00		
California	Palo Alto	1 /87	City	Rosemary Ralston	(415)329-2522	Safety Specialists		0.00		
California	Nevada City	1 /87	Cnty of Nevada	Tom Edwards	(916)885-6886	American Environ.		0.00		
California	Redlands*	2 /87	Cnty: San Bernardino	Joan Dotson	(714)793-1184			0.00		
California	Victorville*	2 /87	Cnty: San Bernardino	Judy Orttung	(714)387-4629	Disp Cntrl Srvcs		0.00		
California	Barstow*	2 /87	Cnty: San Bernardino	Judy Orttung	(714)387-4629	Disp Cntrl Srvcs		0.00		
California	Santee Fill,4x2day	2/21 /87	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	45000.00		224
California	Otay Landfill,4x2day	2/21 /87	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	23000.00		100
California	San Diego,8 days	2/28 /87	San Diego City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		1223
California	Ventura	3 /87	Ventura Reg. Sanit.	Mike Adamske	(805)658-4830	NG Chemcial		0.00		
California	SanMarcos Fill,4x2dy	3/07 /87	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	55000.00		357
California	Ramona Fill, 4 days	3/28 /87	San Diego County	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	24000.00		106
California	Sacramento Cnty	4 /87	Cnty of Sacramento	Jannah Zahler	(916)366-2109	Safety Specialists		0.00		
California	Nevada Cnty	4 /87	Cnty of Nevada	Joe Sosa	(408)988-1111	Safety Specialists		0.00		
California	Los Altos	4 /87	City of Los Altos	Daffney Siegert	(415)948-1491	Bay Area Environ.		0.00		
California	Citrus Heights	4 /87	Cnty of Sacramento	Gina Purin	(916)731-5050	American Environ.		0.00		
California	Yucca	4 /87	City:Yucca Valley	Judy Orttung	(714)387-4629			0.00		
California	Monterey Cnty (2)	4Spr /87		Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Orange Cnty	4Spr /87	Cnty of Orange	Sandy Shaefer	(714)744-0584			0.00		
California	Solano	4Spr /87	Cnty of Solano	Jim Walsh	(707)552-3110			0.00		
California	Lompoc	4Spr /87	City of Lompoc			American Environ.	(714)826-6320	0.00		
California	Sacramento Cnty	5 /87	Cnty of Sacramento	Jannah Zahler	(916)366-2109	Safety Specialists		0.00		
California	Scotts Valley	5 /87		Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Davis	5 /87	Yolo Cnty	Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Santa Monica	5 /87	City of Santa Monica	Jennifer Stone	(213)458-8228	Disp Cntrl Srvcs		0.00		
California	Santa Barbara	5 /87	Cnty of Santa Barb.	Karen Feeney	(805)963-0583	American Environ.		0.00		
California	Davis	5 /87	Yolo Cnty DPW	J.B. Holmquist	(916)666-8775			0.00		
California	Ontario	5 /87	City:Ontario	Judy Orttung	(714)387-4629			0.00		
California	Chino	5 /87	City:Chino	Judy Orttung	(714)387-4628			0.00		
California	Upland	5 /87	City:Upland	Judy Orttung	(714)387-4629			0.00		
California	Sunnyvale	5/16 /87		Gene Wilroth	(408)730-7267	Safety Specialists	(408)988-1111	25851.00	3,980 gal	464
California	Oceanside	5/16 /87	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		178
California	Fremont	5/30 /87	Fremont/Union/Newark	Emi Meiorinrn	(415)464-7941	Chem. Waste Mgt.	(415)770-0575	82774.00		746
California	Salinas	6 /87		Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Rancho Cucamonga*	6 /87	Cnty: San Bernardino	Judy Orttung	(714)387-4629	Disp Cntrl Srvcs		0.00		
California	Santa Barbara	6 /87	Cnty of Santa Barb.	Karen Feeney	(805)963-0583	American Environ.		0.00		
California	Morganhill	6/06 /87	City	Sharon Kohlmanneiehn	(408)779-7231	Safety Specialists	(408)988-1111	0.00	550 gal	30
California	Livermore	6/06 /87	Liv./Dublin/Pleasan.	Emi Mieorin	(415)449-4000	Chem. Waste Mgt.	(415)770-0575	30734.00		237
California	Palo Alto	7 /87	City	Rosemary Ralston	(415)329-2522	Safety Specialists	(415)329-2522	138000.00	9,515 gal	410
California	Milpitas	7 /87		Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Cupertino	7 /87	City of Cupertino	Steve Sano	(408)252-4505	Bay Area Environ.		0.00		
California	Vallejo	7 /87	City of Vallejo	Jim Walsh	(707)552-3110	Vallejo Garbage Co		0.00		
California	St. Helena	7 /87	City of St. Helena	Jim Walsh	(707)552-3110	Vallejo Garbage Co		0.00		
California	Brk/Emeryville/Alb	7 /87	Alameda Cnty	Vince Spencer	(415)644-6510	Chem. Waste Mgt.		0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
California	S.Leandro	7 /87	Cnty of Alameda	Emy Melorin	(415)464-7941			0.00		
California	Tula Vista	7/11 /87	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	1279 gallons	240
California	Solana Beach	7/25 /87	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	1530 gallons	240
California	Truckee	8 /87	Cnty of Nevada	Tom Edwards	(916)985-6666	American Environ.		0.00		
California	Napa	8 /87	City of Napa	Jim Walsh	(707)552-3110	Vallejo Garbage Co		0.00		
California	Elcajon	8/15 /87	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	2185 gallons	250
California	Santa Rosa	8/16 /87	City of Santa Rosa	Toni Santos	(415)770-0575	Chem Waste	(415)770-0575	0.00		
California	Sacramento Cnty	9 /87	Cnty of Sacramento	Jannah Zahler	(916)366-2109	Safety Specialists		0.00		
California	Nevada Cnty	9 /87	Cnty of Nevada	Joe Sosa	(408)988-1111	Safety Specialists		0.00		
California	Haywood	9 /87		Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Mendocino	9 /87	Cnty of Mendocino	Randy Leach	(707)463-4461			0.00		
California	La Jolla	9/26 /87	San Diego City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	1281 gallons	174
California	Monterey Cnty (2)	9Fal /87		Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Orange Cnty	9Fal /87	Cnty of Orange	Sandy Shaefer	(714)744-0584			0.00		
California	Solano	9Fal /87	Cnty of Solano	Jim Walsh	(707)552-3110			0.00		
California	Sacramento Cnty	10 /87	Cnty of Sacramento	Jannah Zahler	(916)366-2109	Safety Specialists		0.00		
California	Santa Clara	10 /87		Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Mountain View	10 /87		Joe Sosa	(408)988-1111	Safety Specialists	(408)988-1111	0.00		
California	Glendale	10 /87	City of Glendale	Steve Adams	(818)956-4844	American Environ.		0.00		
California	Pentaluma	10 /87	City of Pentaluma	Tony Santos	(415)770-0575	Chem Waste		0.00		
California	Fresno	10 /87	LWV	Bette Noblett	(209)439-2867	Safety Specialists		0.00		
California	Santa Barbara	10 /87	Cnty of Santa Barb.	Karen Feeney	(805)963-0583	American Environ.	(714)826-6320	158881.00	14,740 gal	1,228
California	Woodland	10 /87	Yolo Cnty DPW	J.B. Holmquist	(916)666-8775			0.00		
California	Riverside Cnty	10 /87	Cnty:Riverside	Rose Hrinko	(714)369-4335	Disp Cntrl Srvcs		0.00		
California	Sacramento	10/17 /87	Health Dept	Janet Zahler	(916)366-2109			0.00		
California	San Diego	10/17 /87	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	608 gallons	50
California	Sunnyvale*	10/24 /87		Gene Wilroth	(408)730-7267	Safety Specialists	(408)988-1111	41143.00	5,775 gal	490
California	Santa Barbara	11 /87	Cnty of Santa Barb.	Karen Feeney	(805)963-0583	American Environ.	(714)826-6320	0.00		
California	Kings Cnty	11 /87	Cnty DPW					0.00		
California	San Jose	11 /87	City	Richard Gertman	(408)277-4609			0.00		
California	Oxnard	11/14 /87	Ventura Reg. Sanit.	Mike Adamske	(805)658-4630	NG Chemcial		0.00		
California	San Diego	11/14 /87	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	889 gallons	315
California	Irvine	11/21 /87	City of Irvine	Kathrine Obitz	(714)857-0124	Waste Mgt.	(415)770-0575	46995.31		
California	Escondido	11/21 /87	San Diego County	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	2289 gallons	278
California	Sacramento City	/88	Fire Dept	Robert Knight	(916)366-4280			0.00		
California	Monterey County*	/88	Cnty	William Merry	(408)384-5313			0.00		
California	Felton	/88	City	Ilse Kolbus	(415)465-2341			0.00		
California	Watsonville	/88	City	Ilse Kolbus	(408)425-2341			0.00		
California	Gardena	/88	Cnty	Daryl Carpenter	(213)532-9805	Approp Tech II	(619)421-1175	0.00		
California	San Bernardino*	/88	San Bernardino Cnty	Judy Orttung	(714)387-4629			0.00		
California	Fontana*	/88	San Bernardino Cnty	Judy Orttung	(714)387-4629			0.00		
California	Rancho Cucamonga*	/88	San Bernardino Cnty	Diana Christensen	(714)387-4626			0.00		
California	Redlands*	/88	San Bernardino Cnty	Joan Dotson	(714)793-1164			0.00		
California	Victorsville*	/88	San Bernardino Cnty	Judy Orttung	(714)387-4629			0.00		
California	Barstow*	/88	San Bernardino Cnty	Judy Orttung	(714)387-4629			0.00		
California	Santa Monica	/88	City of Santa Monica	Jennifer Stone	(213)458-8228			0.00		
California	San Diego	01/09 /88	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	2538 gallons	251

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
California	San Francisco*	01/21 /88	Cnty and City	Larry Sweatser	(415)468-2442	Sanitary Fill Co.	(415)468-2442	0.00		
California	Carlsbad City	01/30 /88	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	2143 gallons	297
California	Crestline	03/05 /88	San Bernardino Cnty	Diane Christensen	(714)387-4826			0.00		
California	Santa Rosa	03/05 /88	City	Eilene Kortus	(707)576-5311	Chem Waste	(415)770-0575	23430.24		126
California	Spring Valley	03/05 /88	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	1573 gallons	188
California	Palmer	03/19 /88	San Bernardino Cnty	Diane Christensen	(714)387-4826			0.00		
California	San Diego	03/19 /88	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	2190 gallons	322
California	Yolo County	04/ /88	Cnty	Jay Holmquist	(916)666-8775			0.00		
California	Nevada County	04/ /88	Cnty	Woody Halsey	(916)265-1411			0.00		
California	Davis	04/ /88	Cnty	Jay Holmquist	(916)666-8775	Safety Specialists	(415)988-1111	0.00		
California	Healdsberg	04/01 /88				Chem Waste Mgmt	(415)770-0575	0.00		
California	Ontario	04/04 /88	San Bernardino Cnty	Diane Christensen	(714)387-4826			0.00		
California	Encinitas	04/04 /88	San Diego County	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	2587 gallons	350
California	Upland	04/08 /88	San Bernardino Cnty	Diane Christensen	(714)387-4826			0.00		
California	Milpitas	04/16 /88	City	Bob Webster	(408)942-2383			0.00		
California	Los Altos	04/16 /88	City	Daffney Seigert	(415)948-1491			0.00		
California	Healdsburg	04/16 /88	City	Robert Taylor		Chem Waste	(415)770-0575	0.00		84
California	Palo Alto	04/23 /88	City	Rosemary Ralston	(415)329-2522			0.00		
California	San Diego	04/23 /88	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	2003 gallons	385
California	W. Nevada Cnty	04/25 /88	DOt, Waste Mgt Dept	Woody Halsey	(916)265-1411	American Env. Mgmt	(714)826-6320	19500.00	63 drums	580
California	Alcahone City	05/07 /88	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	4198 gallons	485
California	Sunnyvale County	05/14 /88	Cnty	Gene Willroth	(408)730-7277			0.00		
California	Simi Valley	05/14 /88		Brian Gabler	(805)583-6701	GSX	(803)798-2993	0.00		
California	Santa Barbara	05/14 /88	County	Karin Feeney	(805)963-0583	American Env. Mgmt.	(714)826-6320	53450.00	180 drums,700 gal.	505
California	Davis	05/15 /88	Yolo County	Jay Homquist	(916)666-8755	Safety Specialists	(408)988-1111	0.00	36 drums	240
California	Santa Rosa, 7 dy	05/16 /88	City	Eilene Kortus	(707)576-5311	Chem Waste	(415)770-0575	35120.25	303 drums	510
California	Scotts Valley	05/21 /88	City	Bob Geyer	(408)438-0732			0.00		
California	Big Bear	05/21 /88	San Bernardino Cnty	Diane Christensen	(714)387-4826			0.00		
California	San Diego	05/21 /88	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	1190 gallons	125
California	Newark,Fremont,Union	06/04 /88	City	John Sheehan	(415)465-2911	Chem Waste	(415)770-0575	210000.00	570 lab packs	2000
California	Morgan Hill City	06/04 /88	City	Susan Kohlmeneher	(408)779-7231	Nav-Control	(408)848-1470	5300.00		140HH
California	Lompoc	06/08 /88	Santa Barbara Cnty	Karin Feeney	(805)963-0583	American Env. Mgmt.	(714)826-6320	38000.00	58 drums,1560 gal.	380
California	Union City	06/11 /88	City	John Sheehan	(415)465-2911	Chem Waste	(415)770-0575	88060.90		1000
California	San Diego	06/11 /88	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	1534 gallons	205
California	Irvine	06/18 /88	City	Patricia Macintosh	(714)660-3600	Chem Waste	(415)770-0575	20155.00		
California	Sacramento	06/25 /88	Cnty	Robert Knight	(916)386-6160			0.00		
California	San Marcos	06/25 /88	San Diego Cnty	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00	4106 gallons	538
California	Palo Alto	07/ /88	City	Rosemary Ralston	(415)392-2522	Safety Specialists	(408)988-1111	0.00		
California	Orange County	07/ /88	Cnty	Barbara Elfenman	(714)567-7313	Approp Tech II	(619)421-1175	0.00		
California	Petaluma	07/09 /88		Toni Santos	(415)770-0575	Chem Waste Mgmt	(415)770-0575	0.00		
California	Los Angeles County	07/09 /88	Cnty	Joe Reilly		Approp Tech II	(619)421-1175	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
California	Sonoma County	07/09 /88		Steve Harler	(707)996-2102	Chem Waste Mgmt	(415)770-0575	0.00		
California	Cupertino	07/16 /88	City	Kathy Blackburn	(408)252-4505			0.00		
California	Sonoma	07/16 /88	City	Al Mazza	(707)996-2102	Chem Waste	(415)770-0575	0.00		78
California	Anaheim "	08/06 /88	Orange Cnty Haz Matl	Janis Oest	(714)774-0564	Disposal Control	(714)983-0342	0.00		
California	San Diego	08/06 /88	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		125
California	Santa Rosa	08/13 /88	City	Eilene Kortus	(707)576-5311	Chem Waste	(415)770-0575	0.00		153
California	Huntington Beach	08/13 /88	Orange Cnty Haz Matl	Janis Oest	(714)744-0564	Disposal Control	(714)983-0342	0.00		
California	Anaheim	08/20 /88	Orange Cnty Haz Matl	Janis Oest	(714)744-0564	Disposal Control	(417)983-0342	0.00		
California	Anaheim	08/27 /88	Orange Cnty Haz Matl	Janis Oest	(714)744-0564	Disposal Control	(714)983-0342	0.00		
California	Agoura	08/28 /88	LA Cnty Sanitation	Joe Reilly	(213)699-7411	Chem Waste Mgm't	(415)770-0575	0.00		175car
California	Hayward	09/ /88	City	Dolores Heeremen	(415)591-2345			0.00		
California	University City	09/10 /88	San Diego City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		315
California	Whittier	09/18 /88	LA Cnty Sanitation	Joe Reilly	(213)699-7411	Appropriate Tech	(619)421-1175	0.00		
California	Stanton "	09/24 /88	Orange Cnty Haz Matl	Janis Oest	(714)744-0564	Disposal Control	(714)983-0342	0.00		236
California	Oceanside	09/24 /88	San Diego County	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		450
California	Santa Maria	09/24 /88	Santa Barbara Cnty	Karin Feeney	(805)963-0583	Safety Specialists	(408)988-1111	44800.00		430
California	Santa Clara	10/ /88	City	Nick Rinauro, Jr.	(408)727-5385			0.00		
California	Mt. View	10/ /88	City	Frank Mae	(415)966-6343			0.00		
California	Truckee	10/01 /88	Nevada Cnty DOT	Woody Maisey	(916)265-1411	Safety Specialists	(408)988-1111	4780.00	17 drums	
California	Irvine	10/01 /88	Orange Cnty Haz Matl	Janis Oest	(714)744-0564	Disposal Control	(714)983-0342	0.00		540
California	Rolling Hills Est.	10/08 /88	LA Cnty Sanitation	Joe Reilly	(213)699-7411	American Env.	(714)826-6320	0.00		
California	W. Nevada Cnty	10/08 /88	DOT, Waste Mgmt Dept	Woody Maisey	(916)265-1411	Safety Specialists	(408)988-1111	38993.00	118 drums	497
California	Mt View, 2 others	10/08 /88	Cities	Rory Kessler	(408)299-4361	Safety Specialists	(408)988-1111	0.00		
California	Irvine	10/08 /88	Orange County	Janice Oest	(714)744-0483			0.00		
California	Petaluma	10/15 /88				Chem Waste	(415)770-0575	0.00		
California	Davis	10/15 /88	Yolo County	Jay Holmquist	(916)666-8775	Safety Specialists	(408)988-1111	10000.00	40 drums	279
California	San Diego	10/15 /88	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		80
California	W. Sacramento	10/22 /88	Yolo County	Jay Holmquist	(916)666-8775	Chem Waste Mgmt	(312)572-8800	0.00		
California	Petaluma	10/29 /88				Chem Waste	(415)770-0575	0.00		
California	Lysalia	10/29 /88	Audoban Society,	Greg Sparks	(209)733-9081	Chem Waste Mgmt	(312)572-8800	0.00		
California	Poway	10/29 /88	San Diego County	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		
California	Santa Ynez Valley	10/29 /88	Santa Barbara Cnty	Karin Feeney	(805)963-0583	Safety Specialists	(408)988-1111	0.00		
California	Southgate	10/30 /88	LA Cnty Sanitation	Joe Reilly	(213)699-7411	Chem Waste	(213)699-7411	0.00		
California	Santa Rosa	11/05 /88				Chem Waste	(415)770-0575	0.00		
California	San Diego	11/12 /88	City	David Harris	(619)235-0281	Appropriate Tech	(619)421-1175	0.00		
California	Santa Barbara	11/19 /88	County	Karin Feeney	(805)963-0583	Safety Specialists	(408)988-1111	0.00		
California	Pomona	11/20 /88	LA Cnty Sanitation	Joe Reilly	(213)699-7411	Approp. Tech	(619)421-1175	0.00		
California	Los Angeles*	Fall /88		Reva Fabricant	(213)485-5347			0.00		
California	San Mateo	Spr. /88	City	Dolores Lutter	(415)363-4392			0.00		
Califronia	Santa Cruz	/88	City	Ilse Kolbus	(408)425-2341			0.00		
Califronia	Salinas	07/ /88	City	Al Rossi	(408)424-0819			0.00		
Colorado	Tompkins	9Fal /84			(607)274-5360	GSX Services		4680.00	990 gals	109
Colorado	Aurora	10/13 /84	Tri-County Hlth Dept	Bruce Wilson	(303)761-1340	Cecos	(303)341-9370	0.00		
Colorado	Commerce City	10/13 /84	Tri-County Hlth Dept	Bruce Wilson	(303)761-1340	Cecos	(303)341-9370	0.00		
Colorado	Littleton	10/13 /84	Tri-Cnty Hlth Dept	Bruce Wilson	(303)761-1340	Cecos	(303)341-9370	28000.00	3025 gals	358
Colorado	Larimer Cnty	9/28 /85	County	Janelle Henderson	(303)221-7486	GSX Services	(800)251-1227	29372.00	3690 gals	285
Connecticut	Ridgefield	6/23 /84	Ridgefield	Lillian Willis	(203)438-8653	Radiac Research		5000.00	286 gals, 515 lbs	75
Connecticut	Mansfield	4/20 /85	Mansfield	Chuck Vinsonnaler	(203)423-2150	Radiac Research		11000.00	2475 gals	100
Connecticut	Westport/Weston	6/08 /85	Weston/Westport	Helen Speck	(203)222-2656	Radiac Research		16390.00	770 gals, 657 lbs	200+
Connecticut	Greenwich	7/13 /85	Greenwich	Bob Brown	(203)622-6488	Radiac Research		8750.00	550 gals, 242 lbs	125
Connecticut	Wilton	10/19 /85	Ridgefield/Wilton	Lillian Willis	(203)483-8653	Radiac Research		16324.00	556 gals, 701 lbs	200+

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Connecticut	Manchester	10/19 /85	Manchester	Art Glasser	(203)649-8453	Radiac Research		8000.00	204 gals, 290 lbs	33
Connecticut	Farmington	10/26 /85	Farmington	Steve Kushner	(203)673-8221	Radiac Research		14000.00	249 gals, 425 lbs	125
Connecticut	Killingly	11 16 /85	NE CT Reg Plan Agncy	Gerald McCarthy	(203)774-1253	McDonald & Watson		7037.00	575 gals, 2458 lbs	115
Connecticut	Southington	11/02 /85	Southington	Madeline Brunelli		McDonald & Watson		7600.00	3100 gals, 716 lbs	215+
Connecticut	Salisbury/Sharon	11/02 /85	Salisbury/Sharon	Victoria Givotovsky	(203)453-9891	Radiac Research		14000.00	208 gals, 682 lbs	111+
Connecticut	East Lyme	4/12 /86	East Lyme	George Calkins	(203)739-5401	McDonald & Watson		5804.50	92 gals, 1250 lbs	65+
Connecticut	Windsor	4/12 /86	Windsor	Mark Sussman	(203)549-4500	McDonald & Watson		9392.00	770 gals, 4230 lbs	265
Connecticut	North Haven	4/28 /86	Town	Dagobert Pfeiffer	(203)239-3341	McDonald & Watson		9082.00	320 gals, 5364 lbs	140
Connecticut	Barkhamsted	4/26 /86	Reg Refuse Disp Dist	Jim Hart	(203)379-1972	Radiac Research		20050.00	1087 gals, 1308 lbs	115
Connecticut	Saybrook	5/03 /86	CT River (CTRERPA)	Stan Greimann	(203)388-3497	McDonald & Watson		11255.00	555 gals, 27831 lbs	227
Connecticut	W. Hartford	5/03 /86	W. Hartford	Ed O'Leary	(203)236-3231	NE Solvents	(617)683-1002	286.00	537 gals, 356 lbs	300+
Connecticut	New Milford	5/10 /86	County	Lynn Werner	(203)672-6878	McDonald & Watson		16064.00	10235 gals, 17701 lb	250+
Connecticut	Redding/Easton	5/17 /86	Redding/Easton	Maryann Guiter	(203)438-2002	McDonald & Watson		14000.00	410 gals, 2995 lbs	120
Connecticut	Bristol/Burlington	5/17 /86	City	Alan Conrod	(203)584-7645	CECOS		8000.00	415 gals	130
Connecticut	Cheshire	5/17 /86	Town	Richard Pfurr	(203)272-3501	Radiac Research		10345.00	296 gals, 2719 lbs	102
Connecticut	Bethel/Brookfield	5/31 /86	HVCEO	Rick Lynn	(203)775-6256	McDonald & Watson		14000.00	1377 gals, 6276 lbs	250
Connecticut	Wethersfield	6/07 /86	Wethersfld Hlth Dept	Paul Hutcheon	(203)529-8611	GSX Services		10050.00	370 gals, 331 lbs	109
Connecticut	Fairfield	6/14 /86	Fairfield Fire Dept	St. William Kessler	(203)222-4527	McDonald & Watson		9422.00	460 gals, 1800 lbs	120
Connecticut	Granby	6/14 /86	Town of Granby	Paula Madsen	(203)653-7385	NE Solvents	(617)683-1002	16850.00	209 gals, 315 lbs	160
Connecticut	Avon/Canton	9/13 /86	Avon	Hudson Birden	(203)677-2834	McDonald & Watson	(401)946-0200	14000.00	825 gals, 6075 lbs	160
Connecticut	Plainville	9/27 /86	Town	Bob Finn	(203)793-0221	Radiac Research	(718)983-2233	14875.00	455 gals, 2500 lbs	85+
Connecticut	Weston	10/04 /86	Town	Helen Speck	(203)222-2656	McDonald & Watson		10000.00	385 gals, 1770 lbs	120
Connecticut	Southington	10/11 /86	Conservation Comm.	Norm Van Cor		McDonald & Watson		12000.00	2080 gals, 940 lbs	220
Connecticut	Milford/Orange	10/18 /86	Milford Cons. Comm.	Bartley Block		McDonald & Watson		14892.00	355 gals, 1450 lbs	270
Connecticut	Branford	10/18 /86	E Shore Hlth Dept	Dennis Johnson	(203)481-4233	McDonald & Watson		145000.00	575 gals, 2850 lbs	260
Connecticut	Farmington	10/18 /86	Town	Steve Kushner	(203)673-8221	Radiac Research		14000.00	1305 gals, 1400 lbs	110
Connecticut	Guilford/Madison	10/19 /86	Town	Ginny Page	(203)457-1153	McDonald & Watson		13777.00	465 gals, 4300 lbs	210+
Connecticut	Danbury	10/25 /86	Town	Jack Kozuchowski	(203)797-4625	McDonald & Watson		10000.00	865 gals, 2550 lbs	100

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Connecticut	Middletown	11/01 /86	Midstate RPA	Sondra King	(203)347-7214	McDonald & Watson		13700.00	580 gals, 980 lbs	202+
Connecticut	Groton	11/08 /86	Town	Robert Hust	(203)445-8551	McDonald & Watson		12235.00	1995 gals, 450 lbs	150
Connecticut	New Haven	4/25 /87	Town	Susan Whetstone	(203)787-8278	Radiac Research		13000.00	560 gals, 290 lbs	100
Connecticut	North Haven	4/25 /87	Town	Al Cretella	(203)239-2186	McDonald & Watson		14000.00	820 gals, 3950 lbs	214
Connecticut	Windsor	4/25 /87	Town	Nicki Mattei	(203)529-8811	McDonald & Watson		12487.00	1480 gals, 800 lbs	275
Connecticut	Woodbury/Southbury	5/02 /87	Hlth Dist	Tim Callahan	(203)266-4785	NE Solvents		20000.00	880 gals, 8760 lbs	368
Connecticut	Ridgefield//Wilton	5/02 /87	Town	Lillian Willis	(203)438-9653	Radiac Research		25000.00	1815 gals, 220 lbs	301
Connecticut	Norwalk	5/09 /87	Public Works	Dominic DiGangi	(203)854-7791	Radiac Research		30000.00	1225 gals, 516 lbs	250
Connecticut	Mansfield/Coventry	5/16 /87	Public Works	Steve Bowen	(203)429-3340	Radiac Research		10000.00	30 gals, 250 lbs	90
Connecticut	CT River	5/16 /87	CTRERPA	Stan Greimann	(203)388-3487	McDonald & Watson		13000.00	1164 gals, 1087 lbs	190
Connecticut	Wallingford	5/16 /87	Town	Rep. Mary Mushinsky	(203)269-8378	NE Solvents		22000.00	1300 gals, 12175 lbs	307
Connecticut	Suffield	6/06 /87	Town	Dr. Fred Brockett	(203)668-7387	McDonald & Watson		12000.00	715 gals, 1005 lbs	120
Connecticut	Waterford/New Lond	6/06 /87	Public Works	Ed Steward	(203)444-5864	NE Solvents		20000.00	1140 gals, 1870 lbs	250
Connecticut	Hamden	9/12 /87						0.00		378
Connecticut	Southington	9/12 /87				McDonald & Watson		12000.00		258
Connecticut	Stamford	9/19 /87		Marvin Sarra		McDonald & Watson		29500.00		470
Connecticut	N. Branford	9/26 /87		Mary Bigelow	(203)481-6430	NE Solvents	(617)683-1002	4720.00	12 drums	45
Connecticut	Greenwich	9/26 /87				Radiac		0.00		270
Connecticut	E. Hartford	10/10 /87		Richard Toce	(203)289-2781	NE Solvents	(617)683-1002	8600.00	20 drums	105
Connecticut	Westport	10/17 /87		Helen Speck	(203)222-2856	McDonald & Watson	(401)946-0200	0.00		
Connecticut	W. Hartford	10/17 /87		Ed O'Leary	(203)523-5203	NE Solvents	(617)683-1002	16000.00	51 drums	
Connecticut	Ledyard	10/17 /87		Joyce Rowley	(203)464-8740	NE Solvents	(617)683-1002	8100.00	18 drums	
Connecticut	Litchfield	10/24 /87	Regional			McDonald & Watson	(401)946-0200	0.00		425
Connecticut	Woodstock	10/31 /87	Regional			McDonald & Watson	(401)946-0200	0.00		
Connecticut	Fairfield	11/07 /87						0.00		
Connecticut	Wethersfield	11/14 /87				McDonald & Watson	(401)946-0200	0.00		
Connecticut	Glastonberry	04/16 /88	Sanitation Dept	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	22000.00		448
Connecticut	New Haven	04/23 /88	City	Leslie Lewis	(203)566-3489	Radiac		20000.00		251
Connecticut	North Haven	04/23 /88	Cons.Commission	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	18000.00		220
Connecticut	Ellington	04/30 /88	Town	Martha Arvesola	(203)875-3088	NE Solvents	(617)683-1002	13095.00	39 drums	110
Connecticut	Avon/3 others	05-07 /88	Health Dept	Leslie Lewis	(203)566-3489	McDonald * Watson	(401)946-0200	22600.00		375
Connecticut	Gilford/Madison	05/01 /88	Cons.Commission	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	24800.00		586
Connecticut	Farmington	05/07 /88	Town	Leslie Lewis	(203)566-3489	Radiac		19900.00		250
Connecticut	Darien	05/14 /88	Dept.Pub.Works	Leslie Lewis	(203)656-7365	NE Solvents	(617)683-1002	22850.00	64 drums	300
Connecticut	Windsor	05/14 /88	Cons.Commission	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	18000.00		315
Connecticut	Cheshire	05/14 /88	Town	Leslie Lewis	(203)566-3489	Radiac		21500.00		185
Connecticut	Shelton/Monroe	05/21 /88	Town	Lynn Werner	(203)736-9277	NE Solvents	(508)683-1002	20875.00	60 drums	325
Connecticut	Groton	05/21 /86	Town	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	18000.00		370
Connecticut	Plainville	05/21 /88	Dept.Pub.Works	Leslie Lewis	(203)566-3489	Radiac		12400.00		80
Connecticut	Niantic	06/04 /88	Town of E. Lyme	George Caulkins	(203)793-8444	NE Solvents	(617)683-1002	20760.00	57 drums	340
Connecticut	Norwich	06/04 /88	Pub.Util.Dept	Leslie Lewis	(203)566-3489	Radiac		27000.00		200
Connecticut	Waterford/ 2 others	06/04 /88	Dept.Pub.Works	Leslie Lewis	(203)566-3489	Radiac		0.00		340

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Connecticut	CT River RPA	08/04 /88	CT River RPA	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	17000.00		300
Connecticut	Southington	09/10 /88	Health Dept			McDonald & Watson	(401)946-0200	0.00		
Connecticut	Suffield	09/17 /88	Cons.Commission			McDonald & Watson	(401)946-0200	0.00		
Connecticut	Windsor Locks	09/17 /88	Dept.Pub.Works	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	0.00		
Connecticut	Branford	09/24 /88	Selectmen	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	0.00		
Connecticut	Salsbury/3 others	10/01 /88	NW Govt Council	Leslie Lewis	(203)566-3489	NE Solvents	(617)883-1002	0.00		
Connecticut	New Britian,Berlin	10/01 /88	DPW	Richard Opulski	(203)224-2491	Clean Harbors	(508)655-7952	0.00		
Connecticut	N.Branford	10/01 /88	Selectmen	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	0.00		
Connecticut	E. Hartford	10/01 /88	DPW	Rick Toce	(203)289-2781	NE Solvents	(617)883-1002	11475.00		
Connecticut	Falls Village	10/01 /88	Gov't Council	Pat Ferris	(203)868-7341	NE Solvents	(617)883-1002	17750.00		
Connecticut	Wallingford	10/15 /88	Town	Leslie Lewis	(203)566-3489	Radiac	(718)963-2233	0.00		
Connecticut	Wilton	10/22 /88	Cons.Commission	Helen Speck	(203)222-2856	McDonald & Watson	(203)222-2856	0.00		
Connecticut	Fairfield	10/22 /88	Fire Dept	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	0.00		
Connecticut	Manchester	10/22 /88	Cons.Commission	Leslie Lewis	(203)566-3489	Radiac	(718)963-2233	0.00		
Connecticut	Bristol	10/22 /88	DPW	Leslie Lewis	(203)566-3489	CECOS	(713)584-8824	0.00		
Connecticut	Wthersfield,Nwgton	10/22 /88	Health Dept	Leslie Lewis	(203)566-3489	NE Solvents	(617)883-1002	0.00		
Connecticut	Stanford	10/29 /88	Sanitation Dept	Leslie Lewis	(203)56603489	McDonald & Watson	(401)946-0200	0.00		
Connecticut	Stratford	11/05 /88	Cons.Comm.	Mike Kachuba	(203)378-4784	NE Solvents	(617)883-1002	12110.00		
Connecticut	Reading/2 other loc	11/05 /88	Reg.PlanningAgency	Leslie Lewis	(203)566-3489	McDonald & Watson &	NE Solvents	0.00		
Connecticut	Bethel	11/05 /88	Housatonic Officials	Robert J. Halle	(203)775-6256	NE Solvents	(508)883-1002	19720.00		
Connecticut	Stonington	11/12 /88	DPW	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	0.00		
	Milford		Health Dept							
Connecticut	Torrington/3 others	11/19 /88	Litchfield Govt Coun	Leslie Lewis	(203)566-3489	McDonald & Watson	(401)946-0200	0.00		
Delaware	Wilmington	6/20 /87	Hercules Inc	T.J. Winder	(302)594-5000	Rollins Env	(215)358-5550	18500.00	4000 lbs	140
Florida	Dade Cnty&	4Spr /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	54982 lbs	439
Florida	Broward Cnty&	4Spr /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	56892 lbs	629
Florida	Monroe Cnty&	4Spr /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	2604 lbs	37
Florida	Manatee Cnty&	4Spr /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	17282 lbs	334
Florida	Hillsborough Cnty&	4Spr /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	35744 lbs	293
Florida	Pinellas Cnty&	4Spr /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	55460 lbs	1100
Florida	New Port Richey&	4Spr /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	8340 lbs	230
Florida	Brevard Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	33110 lbs	454
Florida	Orange Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	63598 lbs	673
Florida	Osceola Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	9679 lbs	143
Florida	Lake Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	18160 lbs	172
Florida	Seminole Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	13179 lbs	182
Florida	Volusia Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	17785 lbs	192
Florida	Putnam Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	6620 lbs	46
Florida	St. John's Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	8184 lbs	52
Florida	Flagler Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	1377 lbs	22
Florida	Baker Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	658 lbs	11
Florida	Duval Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	81249 lbs	383
Florida	Clay Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	17979 lbs	151
Florida	Nassau Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	9557 lbs	54
Florida	Alachua Cnty&	9Fal /84	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	91640 lbs	982
Florida	Escambia Cnty&	4Spr /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	33195 lbs	109
Florida	Okaloosa Cnty&	4Spr /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	29419 lbs	201
Florida	Santa Rosa Cnty&	4Spr /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	9450 lbs	20
Florida	Walton Cnty&	4Spr /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	4145 lbs	23
Florida	Bay Cnty&	4Spr /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	18885 lbs	130
Florida	Holmes Cnty&	4Spr /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	3380 lbs	11
Florida	Washington Cnty&	4Spr /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	3030 lbs	14
Florida	St. Lucie Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	28712 lbs	160

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Florida	Indian River Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	34739 lbs	146
Florida	Martin Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	31693 lbs	243
Florida	Palm Beach (3)&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	194921 lbs	513
Florida	Collier Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(900)334-5953	0.00	28343 lbs	184
Florida	Hendry Cnty (2)&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	8226 lbs	26
Florida	Lee Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	77632 lbs	484
Florida	Glades Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	208 lbs	4
Florida	Charlotte Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	30385 lbs	281
Florida	Sarasota Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	87413 lbs	700
Florida	DeSoto Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	4403 lbs	74
Florida	Hardee Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	7800 lbs	38
Florida	Okeechobee Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	4433 lbs	24
Florida	Highlands Cnty&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	15222 lbs	90
Florida	Polk Cnty (2)&	9Fal /85	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	108418 lbs	711
Florida	Alachua Cnty	3/19 /88	Cnty	Vince McLeod	(904)373-8509	Chem Waste Mgt		88195.00	101182 lbs	780
Florida	Hernando Cnty&	10/01 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	17475 lbs	118
Florida	Sumter Cnty&	10/03 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	8032 lbs	57
Florida	Levy Cnty&	10/07 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	6487 lbs	39
Florida	Citrus Cnty&	10/08 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	17802 lbs	209
Florida	Bradford&	10/10 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	9033 lbs	51
Florida	Marion&	10/14 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	29551 lbs	233
Florida	Union&	10/14 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	3940 lbs	9
Florida	Dixie&	10/16 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	1306 lbs	16
Florida	Lafayette&	10/18 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	250 lbs	2
Florida	Suwannee&	10/20 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	5600 lbs	25
Florida	Colombia&	10/22 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	10780 lbs	83
Florida	Hamilton&	10/23 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	762 lbs	6
Florida	Gilchrist&	10/25 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	4017 lbs	19
Florida	Madison&	10/28 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	5348 lbs	28
Florida	Taylor&	10/31 /86	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	4898 lbs	15
Florida	Palm Beach Cnty	2/27 /87	Solid Waste Auth	Donna Dale	(305)471-5770	Chem Waste Mgt	(415)651-2864	0.00		
Florida	Martin Cnty	3/06 /87	Env Srvcs	Marilliz Cory	(305)288-5700	Chem Waste Mgt	(415)651-2864	0.00	18370 lbs	
Florida	Palm Beach Cnty	3/08 /87	Solid Waste Auth	Donna Dale	(305)471-5770	Chem Waste Mgt	(415)651-2864	0.00		225
Florida	Palm Beach Cnty	3/14 /87	Solid Waste Auth	Donna Dale	(305)471-5770	Chem Waste Mgt	(415)651-2864	0.00		
Florida	Leon Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	43886 lbs	467
Florida	Jefferson Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	5032 lbs	39
Florida	Wakulla Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	1000 lbs	10
Florida	Franklin Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	2245 lbs	5
Florida	Liberty Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	1354 lbs	4
Florida	Jackson Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	19203 lbs	77
Florida	Calhoun Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	3773 lbs	21
Florida	Gadsden Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	7880 lbs	44
Florida	Gulf Cnty&	4Spr /87	DEP	Jan Kleman	(904)488-0300	GSX Services	(800)334-5953	0.00	2287 lbs	11
Florida	Lake County	/88	County/Conservancy	Don Findell	(904)343-9739	GSX		0.00		
Florida	Indian R. Cnty	/88	County/Conservancy	Sonny Dean	(305)567-8000			0.00		
Florida	Escambia Cnty	/88	County/Conservancy	Charlie Miller	(904)988-6628			0.00		
Florida	Marion County	/88	County/Conservancy	Bill Lycan	(904)245-8833			0.00		
Florida	Lake Worth >(2 dy)	01/22 /88	Cnty	Marc Bruner	(305)471-570	GSX	(800)845-1019	0.00		
Florida	Martin Cnty	04/09 /88	County	Marilliz Cory	(407)288-5700	GSX	(800)845-1019	18890.01	64 drums	290
Florida	Palm City >	04/09 /88	Martin Cnty	Marilliz Cory	(305)288-5700	Chem Waste	(312) 572-880	0.00		
Florida	CollierCnty(3 day) > >	04/28 /88	County & Conservancy	David Russell	(813)774-8418	GLX	(800)845-1019	47254.59	20000 lbs, 300 gals	301
Florida	Citrus County	06/04 /88	County	Jan Kleman	(904)488-0300	GSX	(800)845-1010	15472.50	23795 lbs	250
Florida	West Palm Beach (2)	06/24 /88	County/Conservancy	Marc Bruner	(305)471-5770	GSX	(800)845-1019	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Florida	Lake Worth > (2 dy)	06/24 /88	Palm Beach Cnty	Marc Bruner	(305)471-5770	GSX	(800)845-1019	0.00		
Florida	Volusia County	07/23 /88	County	Linda Lee Anderson	(904)254-4612	GSX	(800)845-1019	14568.00	12,280 lbs	107
Florida	Brevard Cnty 6 day >	08/15 /88	County/Conservancy	Debbie Luger	(407)453-8522	GSX	(800)845-1019	142000.00	151,516 lbs	1896
Florida	Gainesville 3 dy >	08/22 /88	Alachua County	Richard Lusk	(904)373-8509	GSX	(800)845-1019	0.00		1500
Florida	Gainesville	09/22 /88	County	Richard Lusk	(904)373-8509	GSX	(800)845-1019	0.00		
Florida	Citrus County	12/03 /88	GSX is the sponsor	Liz McCormack	(800)845-1019	GSX	(800)845-1019	0.00		
Florida	Volusia County	12/10 /88	County	Lindalee Anderson	(904)736-5927	GSX	(813)573-1405	15187.00	20 55-gal drums, etc	125
Hawaii	Honolulu	08/09 /86	State	Letitia Uyehara	(808)548-6915	Unitek Env Srvcs	(808)834-1444	0.00	1,650 gals	240
Hawaii	5 Islands#	08/ /87	Env Qual Cntrl	George Brosky	(808)548-6915	Unitek Env Srvcs	(808)834-1444	56487.00	12471 lbs	
Hawaii	Maui	01/ /88	Env. Qual Control	George Brosky	(808)548-6915	Unitek Env Srvcs	(808)834-1444	13000.00		
Hawaii	Kauai	03/28 /88	State Env Qual. Dept	Marvin Miura	(808)548-6915			0.00		
Illinois	Champagne	09/13 /87	City	Sam Chandler	(217)351-4443	GSX	(800)845-1019	65000.00	10340 gals	294
Illinois	Adams County #	06/03 /88	EPA	James O'Brein	(217)782-3637	GSX	(800)845-1019	30591.50	10,279 lbs	46
Illinois	Quincy	09/17 /88	Town	Chirstina Komadina	(217)333-8856			50000.00	60 drums	270
Illinois	Holmwood/Flossmoor s#	08/22 /88	EPA	James O'Brien	(217)782-3637	Chem Waste Mgmt	(312)572-8800	0.00		
Illinois	Champagne#	09/24 /88	City	Sam Chandler	(217)351-4443	GSX	(800)845-1019	0.00		
Illinois	Mt Carmel	10/01 /88	Town	Christina Komadina	(217)333-8856	Chem Waste Mgmt	(312)572-8800	0.00		
Illinois	Homewood	10/22 /88	Town	Christina Komadina	(217)333-8856			0.00		
Indiana	Zionsville	8/01 /85	Zionsville Town Bd.	Mary Jo Bradley	(317)769-4195	GSX	(800)251-1227	8700.00	715 gals	80
Indiana	Indianapolis	9/28 /85	City			GSX Services	(800)251-1227	0.00		
Indiana	Indianapolis	11/15 /86	DPW	Sara Guss	(317)236-5353	Process Eng. Group	(317)243-0812	60000.00	2885 gals	225
Indiana	Indianapolis	5/16 /87	DPW	Sara Guss	(317)236-5353	Process Eng. Group	(317)243-0812	60000.00	4680 gals	344
Indiana	Indianapolis	10/10 /87	DPW/Clean City Comm.	Bryan Duncan	(317)236-3806	Process Eng. Group	(317)243-0812	60000.00		180
Indiana	Bloomington Cnty	04/30 /88	Cnty Env. Commission	Julie Kogel	(812)339-2261	GSX	(800)251-1227	25000.00	43 drums	300
Indiana	Indianapolis	05/21 /88	DPW	Sarah Gus	(317)236-4400	Process Engin. Group	(317)243-0182	60000.00	6 SQG +	540
Indiana	Marion Cnty	05/21 /88	DPW	Elva Paulbee	(317)639-1288	Process Engin. Group	(317)243-0182	0.00	5 SQG +	550+
Indiana	Bloomington	05/30 /88		Dave Toumey	(812)336-7377	GSX		22000.00		280
Indiana	Indianapolis	09/10 /88	DPW	Sarah Gus	(317)236-4400	Process Engin. Group	(317)243-0812	0.00		500
Iowa	Dubuque Cnty	8/20 /86	Dept of Nat Res	John Seyb	(515)281-4076	AC Industry	(816)343-5488	23595.00		195
Iowa	Linn Cnty	9/20 /88	Dept of Nat Res	John Seyb	(515)281-4076	AC Industry	(816)343-5488	38357.00		317
Iowa	Lynn County	10/22 /88	County	Liz McCormack	(800)845-1019	GSX	(800)845-1019	0.00		
Iowa	Story County (2dy)	10/29 /88	County	Liz McCormack	(800)845-1019	GSX	(800)845-1019	0.00		
Iowa	Montgomery	11/05 /88	County	Liz McCormack	(800)845-1019	GSX	(800)845-1019	0.00		
Kansas	Great Bend/Wichita&	11/07 /86	KS Dept of Hlth/Env	Tom Gross	(913)296-1603	GSX Services	(800)251-1227	29838.00	7388 lbs	77
Kansas	Topeka&	11/10 /86	KS Dept of Hlth/Env	Tom Gross	(913)296-1603	GSX Services	(800)251-1227	6716.00	2397 lbs	
Kansas	Wichita/Sedgwick	11/12 /86	KS Dept of Hlth/Env	Tom Gross	(316)296-1603	GSX Services	(800)251-1227	92724.00	35435 lbs	433
Kentucky	Lebanon	4Spr /81	Marion County	Keith Brock	(502)692-3363			1200.00	1900 lbs	
Kentucky	Lancaster	9 /81	W. Bluegrass Dist.	Randall Carrier	(606)792-2462	Cecos	(513)724-6114	300.00	330 gals	50
Kentucky	Lancaster	10 /83	W. Bluegrass Dist.	Randall Carrier	(606)792-2462	Cecos	(513)724-6114	600.00	330 gals	125
Louisiana	Baton Rouge (4)	10/26 /85	Env Cntrl/Dow	Chas. Goldsmith	(504)389-6407	Dow Chemical	(504)389-6407	22000.00	6500 lbs	
Louisiana	Baton Rouge (6)	05/03 /86	Dow Chemical Co.	Chas. Goldsmith	(504)389-6407	Dow Chemical	(504)389-6407	23559.00	16000 lbs	326
Louisiana	Baton Rouge (5)	06/27 /87	Dow Chemical Co.	Dean Smith	(504)389-1630	Dow Chemical	(504)385-1630	42200.00	15720 lbs	244
Louisiana	Baton Rouge (5)	05/21 /88	Dow Chemical	Dean Smith	(504)389-1630	Dow Chemical	(504)389-1630	0.00	16000 lbs	
Louisiana	Lafayette/New Orlean	05/21 /88	Dow Chemical	Dean Smith	(504)389-1630	Dow Chemical	(504)389-1630	0.00	see Baton Rouge	
Maine	Central/Southern#	9Fel /84	Pesticide Cntrl	Henry Jennings	(207)289-2731	Poll Cntrl Unltd.		35000.00	9 tons	
Maine	Central/Southern#	4Spr /86	Pesticide Cntrl	Henry Jennings	(207)289-2731	Clean Harbors	(617)849-1800	23685.00	6 tons	53

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Maryland	state-wide oil coll@	/78	MD Env Services	Cliff Willey	(301)269-3291			0.00		
Maryland	Laurel	9Fal /85	GSX Services	Paul Marshall	(800)638-4440	GSX Services	(800)638-4440	0.00		
Maryland	Montgomery County	9/13 /87	Solid Waste Division	Alan Bergsten	(301)840-2370	GSX	(301)953-9583	94000.00	17215 gals.	670
Maryland	Prince Georges	05/22 /88	Solid Waste Division	Karen Napolitano	(301)952-3796	GSX	(800)845-1910	80000.00		230
Maryland	Prince Georges	09/25 /88	Solid Waste Division	Karen Napolitano	(301)952-3796	GSX	(800)845-1910	0.00		170
Maryland	Montgomery	fall /88	Solid Waste Division	Karen Napolitano	(301)952-3796	GSX	(800)845-1910	0.00		
Massachusetts	Lexington	10/30 /82	LWV/Hlth Dept	George A. Smith	(617)862-0500	SCA Chem Serv		1800.00	770 gals	100
Massachusetts	Andover	5/07 /83	Board of Health			Clean Harbors	(617)655-8863	840.00	305 gals	45
Massachusetts	Bedford	5/14 /83	Board of Health			Clean Harbors	(617)655-8863	1380.00	610 gals	72
Massachusetts	Wellesley	5/14 /83				Clean Harbors	(617)655-8863	3680.00	1705 gals	160
Massachusetts	Braintree	5/21 /83	SCA Services			Clean Harbors	(617)655-8863	0.00	930 gals	100
Massachusetts	Fall River	6/11 /83	Chamber of Commerce			Clean Harbors	(617)655-8863	1000.00	330 gals	20
Massachusetts	Plymouth	8/21 /83	Town			Clean Harbors	(617)655-8863	830.00	240 gals	70
Massachusetts	Sudbury	10/15 /83	Public Health Dept			Clean Harbors	(617)655-8863	1380.00	555 gals	70
Massachusetts	Reading	10/22 /83	Town	George A. Smith	(617)862-0500	Clean Harbors	SCA Chemical	2950.00	1595 gals	213
Massachusetts	Lexington	10/22 /83	Town	George A. Smith	(617)862-0500	SCA Chem Serv		2480.00	1595 gals	213
Massachusetts	Concord	10/29 /83	Town			Clean Harbors	(617)655-8863	1755.00	885 gals	100
Massachusetts	Bedford	10/29 /83	Town			Clean Harbors	(617)655-8863	1108.00	464 gals	30
Massachusetts	Westford	11/05 /83	Town			Clean Harbors	(617)655-8863	3956.00	1705 gals	
Massachusetts	Dartmouth	11/05 /83	Town			Clean Harbors	(617)655-8863	2390.00	828 gals	80
Massachusetts	Cape Cod	11/08 /83				Clean Harbors	(617)655-8863	13300.00	8345 gals	850
Massachusetts	Oxford	4/07 /84				Clean Harbors	(617)655-8663	1175.00	385 gals	
Massachusetts	Amherst	4/14 /84				Clean Harbors	(617)655-8863	2987.00	1135 gals	
Massachusetts	Easthampton	4/28 /84				Clean Harbors	(617)655-8863	2881.00	1160 gals	
Massachusetts	Northampton	4/28 /84				Clean Harbors	(617)655-8863	4456.00	1661 gals	
Massachusetts	Norwood	5/05 /84				Clean Harbors	(617)655-8863	3224.00	1288 gals	
Massachusetts	Acton	5/05 /84				Clean Harbors	(617)655-8863	3087.00	1335 gals	
Massachusetts	Belmont	5/12 /84				Clean Harbors	(617)655-8863	2106.00	884 gals	
Massachusetts	Westport	5/12 /84				Clean Harbors	(617)655-8863	2505.00	1100 gals	
Massachusetts	Easton	5/12 /84				Clean Harbors	(617)655-8863	2080.00	732 gals	
Massachusetts	Worcester	5/12 /84				Clean Harbors	(617)655-8863	6500.00	2890 gals	
Massachusetts	Bedford	6/02 /84				Clean Harbors	(617)655-8863	1705.00	680 gals	
Massachusetts	Plymouth	6/08 /84				Clean Harbors	(617)655-8863	2048.00	823 gals	
Massachusetts	Nantucket	8/29 /84				Clean Harbors	(617)655-8863	3875.00	1345 gals	
Massachusetts	Concord	9/15 /84				Clean Harbors	(617)655-8863	2970.00	1142 gals	
Massachusetts	Duxbury	9/15 /84				Clean Harbors	(617)655-8863	2745.00	1503 gals	
Massachusetts	Andover	9/22 /84				Clean Harbors	(617)655-8863	2741.00	1080 gals	120
Massachusetts	Cohasset	9/22 /84				Clean Harbors	(617)655-8863	2457.00	990 gals	
Massachusetts	Tewksbury	9/29 /84				Clean Harbors	(617)655-8863	2095.00	835 gals	
Massachusetts	Lincoln	9/29 /84				Clean Harbors	(617)655-8863	4844.00	2015 gals	
Massachusetts	Cape Cod	10/06 /84				Clean Harbors	(617)655-8863	10000.00	4420 gals	
Massachusetts	Sudbury	10/13 /84				Clean Harbors	(617)655-8863	2946.00	1240 gals	
Massachusetts	Gloucester	10/13 /84				Clean Harbors	(617)655-8863	2100.00	705 gals	
Massachusetts	Pepperell	10/20 /84				Clean Harbors	(617)655-8863	1864.00	680 gals	
Massachusetts	Medfield	10/20 /84				Clean Harbors	(617)655-8863	2214.00	1080 gals	
Massachusetts	Lexington	10/20 /84	Town	George A. Smith	(617)862-0500	SCA Chem Serv	(617)655-8863	3400.00	1815 gals	164
Massachusetts	Westwood	10/27 /84				Clean Harbors	(617)655-8863	5880.00	2324 gals	162
Massachusetts	Townsend	10/27 /84				Clean Harbors	(617)655-8863	1447.00	510 gals	
Massachusetts	N. Reading	10/27 /84				Clean Harbors	(617)655-8863	2368.00	755 gals	32
Massachusetts	Wellesley	11/03 /84				Clean Harbors	(617)655-8863	3747.00	1457 gals	168
Massachusetts	Sharon	11/03 /84				Clean Harbors	(617)655-8863	6344.00	2995 gals	
Massachusetts	Plymouth	11/17 /84				Clean Harbors	(617)655-8863	1914.00	775 gals	
Massachusetts	Canton	4/13 /85	Board of Health		(617)828-0615	Inland Poll Cntrl	(617)843-7110	4300.00	885 gals	
Massachusetts	Braintree	5/14 /85				Clean Harbors	(617)655-8863	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Massachusetts	Amherst	9/21 /85				Clean Harbors	(617)655-8863	5950.00	1830 gals	
Massachusetts	Chelmsford	9/28 /85						0.00		
Massachusetts	Bedford	9/28 /85						0.00		
Massachusetts	Hamilton	9Fal /85						0.00		
Massachusetts	Leverett	9Fal /85						0.00		
Massachusetts	Nantucket	9Fal /85						0.00		
Massachusetts	Northrop	9Fal /85						0.00		
Massachusetts	Shutesbury	9Fal /85						0.00		
Massachusetts	Southborough	9Fal /85						0.00		
Massachusetts	Needham	10/05 /85				Clean Harbors	(617)655-8863	7550.00	1925 gals	
Massachusetts	Kingston	10/05 /85				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Marthas Vineyard	10/05 /85		Kate Gage	(617)693-3479	Inland Poll Cntrl	(617)843-7110	18661.00	1870 gals	
Massachusetts	Concord	10/05 /85						0.00		
Massachusetts	Carlisle	10/05 /85				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Lincoln	10/12 /85				Clean Harbors	(617)655-8863	7000.00	1525 gals	
Massachusetts	Acton	10/12 /85				Clean Harbors	(617)655-8863	4100.00	1000 gals	
Massachusetts	Boxboro	10/12 /85				Clean Harbors	(617)655-8863	2000.00		
Massachusetts	Littleton	10/12 /85				Clean Harbors	(617)655-8863	2000.00		
Massachusetts	Pepperell	10/19 /85				Clean Harbors	(617)655-8863	2845.00	360 gals	
Massachusetts	Lexington	10/19 /85				Clean Harbors	(617)655-8863	10962.00	1670 gals	
Massachusetts	Dover	10/26 /85				Clean Harbors	(617)655-8863	4500.00	895 gals	
Massachusetts	Westwood	10/26 /85				Clean Harbors	(617)655-8863	11860.00	2280 gals	
Massachusetts	Weston	10/26 /85		Ward Carter	(617)883-7320	GSX Services		0.00		
Massachusetts	Burlington	10/27 /85				NE Solvents	(617)883-1002	0.00		
Massachusetts	Arlington	11/02 /85				Clean Harbors	(617)655-8863	4732.00	890 gals	
Massachusetts	Marshfield	11/02 /85				Clean Harbors	(617)655-8863	4200.00	1075 gals	
Massachusetts	Greenfield	11/09 /85				Clean Harbors	(617)655-8863	4382.00	830 gals	
Massachusetts	Medfield	11/09 /85				NE Solvents	(617)883-1002	0.00		
Massachusetts	Reading	11/09 /85				NE Solvents	(617)883-1002	0.00		
Massachusetts	Brockton	11/16 /85				Clean Harbors	(617)655-8863	2610.00	415 gals	
Massachusetts	Easton	11/16 /85				Clean Harbors	(617)655-8863	2315.00	480 gals	
Massachusetts	Natick	4/12 /86				Clean Harbors	(617)655-8863	18135.00	3785 gals	
Massachusetts	Hamilton	4/12 /86				Clean Harbors	(617)655-8863	4340.00	750 gals	
Massachusetts	Brewster	4/26 /86				Clean Harbors	(617)655-8863	7132.00	1135 gals	
Massachusetts	Chelmsford	5/03 /86				Clean Harbors	(617)655-8863	5000.00	835 gals	
Massachusetts	Scituate	5/03 /86				Clean Harbors	(617)655-8863	6477.00	1050 gals	
Massachusetts	Watertown	5/03 /86		Donna Moultrip	(617)484-2357	Inland Poll Cntrl	(617)843-7110	11000.00		
Massachusetts	Quincy	5/03 /86	DPW	David Coulton	(617)773-1380	Inland Poll Cntrl	(617)843-7110	47000.00	7590 gals	
Massachusetts	Belmont	5/03 /86		Donna Moultrip	(617)484-2357	Inland Poll Cntrl	(617)843-7110	7562.00		
Massachusetts	Wayland/Sudbury	5/10 /86				NE Solvents	(617)883-1002	17025.00	2557 gals	
Massachusetts	Dartmouth	5/10 /86				Clean Harbors	(617)655-8863	7020.00	1190 gals	
Massachusetts	Hanover	5/10 /86				Clean Harbors	(617)655-8863	5217.00	965 gals	
Massachusetts	Plympton	5/17 /86				Clean Harbors	(617)655-8863	3582.00	500 gals	
Massachusetts	Winchendon	5/17 /86				Clean Harbors	(617)655-8863	4855.00	830 gals	
Massachusetts	Cambridge	5/31 /86				Clean Harbors	(617)655-8863	7907.00	1465 gals	
Massachusetts	Burlington	6/07 /86	Town	Dick Lanbord		NE Solvents	(617)883-1002	8180.00	1038 gals	
Massachusetts	Stoughton	6/14 /86				Clean Harbors	(617)655-8863	4572.00	720 gals	
Massachusetts	Barnstable	6/21 /86	Cape Cod Planning		(617)362-2551	NE Solvents	(617)883-1002	13750.00	1755 gals	
Massachusetts	Wellfleet	6/21 /86	Cape Cod Planning		(617)362-2551	NE Solvents	(617)883-1002	9000.00	850 gals	
Massachusetts	Falmouth	6/28 /86	Cape Cod Planning		(617)362-2551	NE Solvents	(617)883-1002	15850.00	2133 gals	
Massachusetts	Harwich	6/28 /86	Cape Cod Planning		(617)362-2551	NE Solvents	(617)883-1002	19250.00	2465 gals	
Massachusetts	Townsend	9/13 /86				Clean Harbors	(617)655-8863	4305.00	715 gals	
Massachusetts	Amherst	9/13 /86				Clean Harbors	(617)655-8863	11650.00	1955 gals	
Massachusetts	Ashby	9/13 /86				Clean Harbors	(617)655-8863	1465.00		
Massachusetts	Concord	9/20 /86				Clean Harbors	(617)655-8863	3900.00	540 gals	

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Massachusetts	Plymouth	9/20 /86				Clean Harbors	(617)655-8863	5795.00	890 gals	
Massachusetts	Weymouth	9/20 /86	Town	Jim Clark		NE Solvents	(617)883-1002	22100.00	3750 gals	
Massachusetts	Stoneham	9/27 /86	Metro Area Planning	Judy Weigand	(617)451-2770	NE Solvents	(617)883-1002	11850.00	1753 gals	
Massachusetts	Littleton	9/29 /86				Clean Harbors	(617)655-8863	6727.00	335 gals	
Massachusetts	Stowe	9/29 /86				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Boxboro	9/29 /86				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Acton	9Fal /86				Clean Harbors	(617)655-8863	4522.00	770 gals	
Massachusetts	Chelmsford	9Fal /86				Clean Harbors	(617)655-8863	8255.00	1355 gals	
Massachusetts	W. Springfield	9Fal /86				Clean Harbors	(617)655-8863	11000.00	1350 gals	
Massachusetts	Williamstown	9Fal /86				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Dalton	9Fal /86				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Lee	9Fal /86				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Avon	9Fal /86				Clean Harbors	(617)655-8863	2172.00	220 gals	
Massachusetts	Lenox	9Fal /86				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Easton	9Fal /86				Clean Harbors	(617)655-8863	5206.00	855 gals	
Massachusetts	Halifax	9Fal /86				Clean Harbors	(617)655-8863	4508.00	635 gals	
Massachusetts	N. Attleboro	9Fal /86	DPH	Jack Busch	(617)695-3102	Franklin Pumping	(617)384-8151	0.00		
Massachusetts	Taunton/Raynham	9Fal /86	Towns	Roger Hoffman	(617)822-2700	McDonald & Watson	(401)942-0200	12000.00		
Massachusetts	Brockton	10/04 /86				Clean Harbors	(617)655-8863	4457.00	890 gals	
Massachusetts	Andover	10/04 /86	Merrimac Valley	Alan McKintosh	(617)374-0519	NE Solvents	(617)883-1002	17850.00	2605 gals	
Massachusetts	Waltham	10/08 /86	Metro Area Planning	Judy Weigand	(617)451-2770	NE Solvents	(617)883-1002	8725.00	937 gals	
Massachusetts	Duxbury	10/11 /86				NE Solvents	(617)883-1002	17250.00	2131 gals	
Massachusetts	Stow	10/12 /86				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Pepperell	10/18 /86				Clean Harbors	(617)655-8863	2450.00	370 gals	
Massachusetts	Groton	10/18 /86				Clean Harbors	(617)655-8863	5488.00	855 gals	
Massachusetts	Needham	10/18 /86				Clean Harbors	(617)655-8863	0.00		
Massachusetts	Winchester	10/18 /86		Joe Tabbi	(617)721-1721	NE Solvents	(617)883-1002	12000.00	1386 gals	
Massachusetts	Georgetown	10/18 /86		Alan McKintosh	(617)374-0519	NE Solvents	(617)883-1002	6800.00	708 gals	
Massachusetts	Marlboro	10/18 /86	Metro Area Planning	Judy Weigand	(617)451-2770	NE Solvents	(617)883-1002	7550.00	857 gals	
Massachusetts	Arlington	10/25 /86				Clean Harbors	(617)655-8863	8000.00		
Massachusetts	Westwood	10/25 /86				Clean Harbors	(617)655-8863	15368.00	2780 gals	
Massachusetts	Haverhill	10/25 /86		Alan McKintosh	(617)374-0519	NE Solvents	(617)883-1002	13250.00	1811 gals	
Massachusetts	Westford	10/25 /86		Denise Lauler	(617)275-7120	NE Solvents	(617)683-1002	7350.00	763 gals	
Massachusetts	Wilmington	10/25 /86	Metro Area Planning	Judy Weigand	(617)451-2770	NE Solvents	(617)883-1002	11000.00	1416 gals	
Massachusetts	Lexington	10/25 /86		George Smith		NE Solvents	(617)683-1002	35850.00	6033 gals	450
Massachusetts	Bridgewater	11/01 /86		Nancy Keskon	(617)697-6454	Inland Poll Cntrl	(617)843-7110	0.00	3300 gals	
Massachusetts	Woburn	11/01 /86	Metro Area Planning	Judy Weigand	(617)451-2770	NE Solvents	(617)883-1002	20300.00	3182 gals	
Massachusetts	Sterling	11/01 /86		Robert Flynn	(617)464-8021	NE Solvents	(617)883-1002	7300.00	552 gals	
Massachusetts	Wellesley	11/01 /86	Metro Area Planning	Judy Weigand	(617)451-2770	NE Solvents	(617)883-1002	12100.00	1308 gals	
Massachusetts	Wrentham	11/01 /86		Maureen Oelink	(617)565-1500	NE Solvents	(617)683-1002	12300.00	1652 gals	
Massachusetts	Greenfield	11/08 /86				NE Solvents	(617)683-1002	18000.00	3520 gals	
Massachusetts	New Bedford	11/08 /86	SE Regional Planning	Steve Smith	(617)824-1367	NE Solvents	(617)883-1002	8450.00	1125 gals	
Massachusetts	Canton	11/08 /86	Public Health Dist			NE Solvents	(617)883-1002	11700.00	1620 gals	
Massachusetts	Orange	11/08 /86		Jim Dohrman	(413)774-4015	NE Solvents	(617)883-1002	5000.00	346 gals	
Massachusetts	Plymouth	11/08 /86				Clean Harbors	(617)655-8863	18616.00	2780 gals	
Massachusetts	Holyoke	11/09 /86				Clean Harbors	(617)655-8863	15881.00	2645 gals	
Massachusetts	Orange	11/15 /86				NE Solvents	(617)683-1002	0.00		
Massachusetts	Sharon	11/15 /86				NE Solvents	(617)683-1002	0.00		
Massachusetts	Walpole	11/15 /86				NE Solvents	(617)683-1002	0.00		
Massachusetts	Melrose	11/15 /86				NE Solvents	(617)683-1002	0.00		
Massachusetts	N. Reading	11/22 /86				NE Solvents	(617)683-1002	0.00		
Massachusetts	Dover/Medfield	11/22 /86				NE Solvents	(617)683-1002	0.00		
Massachusetts	Cohasset/Hingham	11/22 /86				NE Solvents	(617)683-1002	0.00		
Massachusetts	Ayer/Bolton	11/22 /86				NE Solvents	(617)683-1002	0.00		
Massachusetts	Plymouth	3/28 /87				Clean Harbors	(617)655-8863	2621.00	15 drums	

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Massachusetts	Auburn/Oxford	4/11 /87	Brd of Selectmen	Alice Walker	(617)987-8936	NE Solvents	(617)683-1002	10825.00	32 drums	
Massachusetts	Hamilton	4/11 /87				Clean Harbors	(617)655-8863	6284.00	32 drums	
Massachusetts	Middleborough	4/25 /87		John Healey	(617)947-0928	Clean Harbors	(617)655-8863	12420.00	62 drums	
Massachusetts	Westborough	4/25 /87		Paul McNylty	(617)366-7100	NE Solvents	(617)683-1002	6500.00	16 drums	
Massachusetts	Groton	4/25 /87				Clean Harbors	(617)655-8863	6985.00	32 drums	
Massachusetts	S. Dartmouth	5 /87	Town	Bob Gollege		McDonald & Watson		12000.00		
Massachusetts	Holden	5/02 /87		John Westerling	(617)829-6581	NE Solvents	(617)683-1002	8200.00	14 drums	
Massachusetts	Natick	5/02 /87	Clean Harbors	Steve Ganley	(617)655-8863	Clean Harbors	(617)655-8863	0.00	44 drums	
Massachusetts	Wayland/Sudbury	5/09 /87	Towns	Mike Sullivan	(617)443-8891	NE Solvents	(617)683-1002	17725.00	52 drums	
Massachusetts	Hanover	5/09 /87				Clean Harbors	(617)655-8863	4872.00	20 drums	
Massachusetts	Tewksbury	5/16 /87				Clean Harbors	(617)655-8863	3736.00	22 drums	
Massachusetts	Cambridge	5/30 /87		Suzanne Dworsky		Clean Harbors	(617)655-8863	4632.00	20 drums	
Massachusetts	Burlington	6/06 /87	Town	Dick Lombard	(617)272-6700	NE Solvents	(617)683-1002	10700.00	29 drums	
Massachusetts	Westfield	6/06 /87		Daniel Reardon	(617)569-9181	Clean Harbors	(617)655-8863	6815.00	41 drums	
Massachusetts	Braintree	6/06 /87	Clean Harbors	Mike Hatch	(617)849-1800	Clean Harbors	(617)655-8863	12780.00	49 drums	
Massachusetts	Halifax	6/13 /87				Clean Harbors	(617)655-8863	3423.00	24 drums	
Massachusetts	Stoughton	6/13 /87				Clean Harbors	(617)655-8863	7822.00	35 drums	
Massachusetts	Tewksbury	6/20 /87				Clean Harbors	(617)655-8863	3996.00	24 drums	
Massachusetts	Seekonk/Rehoboth	6/27 /87		Manuel Mello	(617)366-7400	Clean Harbors	(617)655-8863	10420.00	47 drums	
Massachusetts	Templeton	7/18 /87	LWV	Maureen Blasco	(617)297-0996	Clean Harbors	(617)655-8863	8568.00		
Massachusetts	Littleton	8/17 /87				Clean Harbors	(617)655-8863	1527.00		
Massachusetts	N. Attleboro	9/03 /87	DPH	Jack Busch	(617)695-3102	Franklin Pumping	(617)384-6151	0.00		
Massachusetts	Amherst	9/12 /87		Joanie Newman	(413)323-4548	Clean Harbors	(617)655-8863	11855.00	42 drums	
Massachusetts	Plymouth	9/19 /87				Clean Harbors	(617)655-8863	7300.00	22 drums	
Massachusetts	Marshfield	9/26 /87		Robert Canevazzi	(617)747-1820	Clean Harbors	(617)655-8863	7350.00	20 drums	
Massachusetts	Brockton/Avon	9/26 /87		Carolyn Stone	(617)580-1100	Clean Harbors	(617)655-8863	16105.00		
Massachusetts	Reading	9/26 /87		Ruth Cogan	(617)942-0500	Clean Harbors	(617)655-8863	11760.00	31 drums	
Massachusetts	Boxboro/Acton/Stow	9/26 /87		Douglas Halley	(617)264-9824	Clean Harbors	(617)655-8863	3925.00		
Massachusetts	Ashby/Townsend	10/03 /87	Towns	Beth parsons	(617)597-8058	Clean Harbors	(617)655-8863	11775.00		
Massachusetts	Concord	10/10 /87				Clean Harbors	(617)655-8863	5225.00		
Massachusetts	Kingston	10/10 /87	Clean Harbors	Mike Hatch	(617)655-8863	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Bedford	10/17 /87	Town of	Carla Priest	(617)275-6507	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Pepperell	10/17 /87	Town	Cheryl Ross	(617)433-6700	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Longmeadow	10/17 /87	Town	Russell Denver	(413)567-5433	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Chelmsford	10/24 /87	Town	Richard Day	(617)256-2061	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Manchester	10/24 /87	Town	Linda Zager	(617)526-7385	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Needham	10/24 /87	Town			Clean Harbors	(617)655-8863	0.00		
Massachusetts	Westwood	10/31 /87	Town	David Black	(617)326-4469	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Boxford/Topsfield	10/31 /87	Towns	Ira Singer	(617)777-3817	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Williamstown	10/31 /87	Town	Steve LeDoux	(413)458-3500	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Franklin	11 /87		Walter Jack		Franklin Pumping	(617)384-6151	0.00		
Massachusetts	S. Hadley	11/07 /87	Town	Phillip Pattison	(413)538-5033	NE Solvents	(617)683-1002	0.00		
Massachusetts	Greenfield	11/07 /87	Franklin CPC	Lynn Rubenstein	(413)774-4015	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Northampton	11/07 /87		Peter McErlain	(413)586-6850	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Belmont/Watertown	11/07 /87		John Malone	(617)484-2357	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Southampton	11/14 /87		Charles Kaniecki	(617)527-4741	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Winchester	11/14 /87		Joseph Tabbi	(617)721-7121	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Weymouth	11/14 /87		James Clark	(617)335-2000	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Arlington	11/21 /87	Public Hlth Dept			Clean Harbors	(617)655-8863	0.00		
Massachusetts	Billerica	11/21 /87	Town	Paul Talbot	(617)667-7182	Clean Harbors	(617)655-8863	0.00		
Massachusetts	Holbrook	04/09 /88	Town/Town Hall	Andy Prasse	767-4616	NE Solvents	(508)683-1002	11900.00	34 drums	250
Massachusetts	Foxborough	04/16 /88	Town Board of Health	Paul Smith	(617)543-2011	NE Solvents	(508)683-1002	10845.00	29 drums	
Massachusetts	Methuen	04/16 /88	Town	Frank Russo	(508)794-3222	NE Solvents	(508)683-1002	13390.00	38 drums	390
Massachusetts	Shrewsbury	04/23 /88	Town	Bob Jaques	(508)845-3521	NE Solvents	(508)683-1002	11345.00	29 drums	
Massachusetts	Cambridge	04/23 /88	Dept of Health	Kevin Doherty		Clean Harbors	(508)655-8863	15000.00	1,641 gallons	

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Massachusetts	Groton	04/23 /88	Bd of Health	Dennis Griffin	(508)448-3575	Clean Harbors	(508)655-8863	12025.00	1,016 gallons	57
Massachusetts	Hamilton	04/23 /88	Bd. of Health	Martin Fair	(508)468-4455	Clean Harbors	(508)655-8863	7500.00	716 gallons	
Massachusetts	West Newbury	04/24 /88	4 towns	Shirley Griffin	(508)363-4407	NE Solvents	(508)683-1002	14140.00	41 drums	158
Massachusetts	Wayland	04/28 /88	Sudbury/Wayland	Mike Guernsey	(508)358-7328	NE Solvents	(508)683-1002	4930.00	14 drums	56
Massachusetts	Andover	04/30 /88	Andover/N. Andover	Everett Penney	(617)888-4350	NE Solvents	(508)683-1002	11940.00	49 drums	
Massachusetts	Brewster	04/30 /88	Town	Nancy Ellis	(517)896-3701	NE Solvents	(508)683-1002	10795.00	28 brums	
Massachusetts	Northboro	04/30 /88	Zecco, Inc	Harvey Thomazin	(508)393-2537	NE Solvents	(508)683-1002	9485.00	24 drums	
Massachusetts	Fall River	04/30 /88	City	Lt. Miguel Masse	(508)674-5003	Clean Harbors	(508)655-8863	8175.00	886 gallons	218
Massachusetts	Hanover	05/07 /88	Bd.of Health	Ms. Kruser	(617)826-4811	Clean Harbors	(508)655-8863	15010.00	41 drums	
Massachusetts	Lexington	05/07 /88	Town	George Smith	(617)862-0500	NE Solvents	(508)683-1002	6175.00	12 drums	
Massachusetts	Wayland	05/07 /88	Town of Sudbury	Mike Guerncy	(508)358-7328	NE Solvents	(508)683-1002	9830.00	25 drums	185
Massachusetts	Ipswich	05/07 /88	Health Dept	Dominic Badolato	(508)356-4800	Clean Harbors	(508)655-8863	15000.00	2,348 gallons	206
Massachusetts	Newton	05/08 /88	City	Bruce Elias	(617)552-7175	NE Solvents	(508)683-1002	52950.00	164 drums	488
Massachusetts	Ashland	05/14 /88	Town/Hopkinton/Holl.	Greg Dovan	(617)435-9408	NE Solvents	(508)683-1002	13180.00	36 drums	376
Massachusetts	Hingham	05/14 /88	4 towns/Hlth Board	Daley	(617)749-0452	NE Solvents	(508)683-1002	23400.00	80 drums	
Massachusetts	Milford	05/14 /88	Town	Paul Mazzuchili	(617)473-0023	NE Solvents	(508)683-1002	23885.00	77 drums	
Massachusetts	Natick	05/14 /88	Town	Roger Wade	(508)651-7244	Clean Harbors	(508)655-8863	17285.00	2,276 gallons	
Massachusetts	Whitman	05/14 /88	Bd. of Health		(617)447-0209	Clean Harbors	(508)655-8863	10805.00	1,138 gallons	
Massachusetts	Wayland	05/17 /88	Sudbury/Wayland	Mike Guernsey	(508)358-7328	NE Solvents	(508)683-1002	8580.00	20 drums	74
Massachusetts	Agawam	05/21 /88	Town	Ron Young	(413)786-0400	NE Solvents	(508)683-1002	15010.00	46 drums	
Massachusetts	Framingham	05/21 /88	Town Board of Health	Bob Cooper	(617)820-4881	NE Solvents	(508)682-1002	20015.00	63 drums	232
Massachusetts	Westfield	05/21 /88	Town	Mr. J.T. Coniff	(413)568-8181	Clean Harbors	(508)655-8863	17315.00	2,298 gallons	
Massachusetts	Norwood	05/21 /88	Town	Paul Hennebery	(617)762-1242	Clean Harbors	(508)655-8863	12080.00	1,685 gallons	198
Massachusetts	Boston	05/21 /88	City Env.Dept.	Denise Brightenecker	(617)725-4417	Clean Harbors	(508)655-8863	6825.00	814 gallons	
Massachusetts	Edgartown	05/24 /88	Refuse & Rsrce Rec	Kate Gage	(508)693-3478	NE Solvents	(508)683-1002	4200.00	14 drums	
Massachusetts	Weymouth	05/28 /88	DPW	Frank Lagrotteria	(617)337-5100	Clean Harbors	(508)66508863	34382.50	3,227 gallons	
Massachusetts	Chicopee	05/28 /88	City	Stanley Kulig		Clean Harbors	(508)655-8863	36442.40	3,421 gallons	
Massachusetts	Burlington	06/04 /88	Town	Dick Combard	(617)672-6700	NE Solvents	(508)683-1002	14640.00	41 drums	
Massachusetts	Gardner	06/04 /88	Town/Reg. Plann Comm	Kathy Kelly		NE Solvents	(508)683-1002	14240.00	42 drums	
Massachusetts	Woburn	06/04 /88	City	Bill McGowan	(617)932-4500	Clean Harbors	(508)655-8863	28017.82	3,024 gallons	
Massachusetts	Longmeadow	06/04 /88	Town	Brian Blackburn	(413)283-8851	Clean Harbors	(508)655-8863	15691.00	1,880 gallons	
Massachusetts	Cambridge(2nd of yr)	06/04 /88	Dept. of Health	Kevin Doherty	(617)498-1486	Clean Harbors	(508)655-8863	7985.00	677 gallons	
Massachusetts	Bernardston	06/11 /88	Cnty Comm. Office	Lynn Rubenstein	(413)774-3167	NE Solvents	(508)683-1002	5340.00	18 drums	
Massachusetts	Bristol	06/11 /88	Lakes Rgn Plan Comm	Kim Koulet	(603)744-2441	NE Solvents	(508)683-1002	14825.00	39 drums	
Massachusetts	Buckland	06/11 /88	Town/Cty Comm Office	Lynn Rubenstein	(413)774-3167	NE Solvents	(508)683-1002	6035.00	20 drums	
Massachusetts	Deerfield	06/11 /88	Town/Cty Comm Office	Lynn Rubinstein	(413)774-3167	NE Solvents	(508)683-1002	7890.00	27 drums	
Massachusetts	Orange	06/11 /88	Town/Cty Comm Office	Lynn Rubinstein	(413)771-3167	NE Solvents	(508)683-1002	4690.00	16 drums	
Massachusetts	Wayland	06/11 /88	Sudbury/Wayland	Mike Guernsey	(508)358-7328	NE Solvents	(508)683-1002	11890.00	32 drums	144
Massachusetts	Stoughton	06/11 /88	Town	James Conlon	(617)344-2432	Clean Harbors	(508)655-8863	18820.00	2,403 gallons	
Massachusetts	Attleboro	06/11 /88	Town	James Mooney	(508)222-9610	Clean Harbors	(508)655-8863	21210.00	2,681 gallons	

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Massachusetts	Plymouth	06/11 /88	Town	Robert Canevazzi	(617)747-1620	Clean Harbors	(508)655-8863	14075.00	1,990 gallons	
Massachusetts	Harwich	06/18 /88	Cape Plan/Devt Comm	Paula Champagne	(617_430-0815	NE Solvents	(508)583-1002	14895.00	38 drums	
Massachusetts	Hudson	06/18 /88	Town	Chief Gerrity	(508)562-5585	NE Solvents	(508)683-1002	9930.00	25 drums	244
Massachusetts	Wellfleet	06/18 /88	Cape Plan/Devt Comm	John Chatham	(508)349-3702	NE Solvents	(508)683-1002	12530.00	30 drums	
Massachusetts	Yarmouth	06/18 /88	Cape Plan/Devt Comm	Bruce Murphy	(508)398-2231	NE Solvents	(508)683-1002	15850.00	41 drums	
Massachusetts	Peabody	06/18 /88	Town	Peter Angeramo	(508)532-3000	Clean Harbors	(508)655-8863	19422.50	2,508 gallons	150
Massachusetts	Saugus	06/18 /88	Town	Joe Giancola	(617)233-7002	Clean Harbors	(508)655-8863	8425.00	877 gallons	63
Massachusetts	Boston-Jamaica Plain	06/18 /88	City	Denise Brightenecker	(617)725-4417	Clean Harbors	(508)655-8863	12377.50	1,372 gallons	
Massachusetts	W. Barnstable	06/25 /88	Cape Plan/Devt Comm	Donna Miorardy	(617)775-1120	NE Solvents	(508)683-1002	17325.00	43 drums	
Massachusetts	East Falmouth	06/25 /88	Cape Plan/Devt Comm	Donna Miorardy	(517)775-1120	NE Solvents	(508)683-1002	14745.00	38 drums	
Massachusetts	Lee	06/25 /88	Town	Diane Lamber	(413)243-2100	NE Solvents	(508)683-1002	5745.00	11 drums	
Massachusetts	Newburyport	06/25 /88	City	John Davey	(508)830-6289	NE Solvents	(508)683-1002	12235.00	31 drums	
Massachusetts	Waltham	06/25 /88	City	Bob Bailloux	(617)893-4040	NE Solvents	(508)683-1002	7485.00	16 drums	
Massachusetts	Wakefield	06/25 /88	Bd. of Health	Jim Nugent	(617)246-6375	Clean Harbors	(508)655-8863	3915.00	2,224 gallons	
Massachusetts	Lunenburg, 2 others	06/25 /88	Town	Bonnie Hathaway		Clean Harbors	(508)655-8863	9400.00	1,040 gallons	
Massachusetts	Boston: Alston,Bri.	06/25 /88	City	Denise Brightenecker	(617)725-4417	Clean Harbors	(508)655-8863	13865.00	1,795 gallons	
Massachusetts	Scituate	08/30 /88	Higham Brd of Slctmn	Joe Godzik	(617)545-3300	NE Solvents	(508)683-1002	12975.00	37 drums	
Massachusetts	Westport	09/06 /88	Selectmen	Anne Barnes	(508)636-4521	NE Solvents	(508)683-1002	8725.00		
Massachusetts	Martha's Vineyard*	09/ /88	Town	Kate Gage	(508)693-3479	NE Solvents	(508)683-1002	0.00		
Massachusetts	Northampton, 2 day	09/09 /88	Pioneer Planning Com	Chris Curtis	(413)781-6045	NE Solvents	(508)683-1002	50750.00		
Massachusetts	Springfield	09/10 /88	Town/DEM	Raymond Turgeon	(413)787-6224	Clean Harbors	(508)655-8863	46510.00	4541 gallons	
Massachusetts	Goshen	09/10 /88	Pioneer Planning Com	Chris Curtis	(413)781-6045	NE Solvent	(508)683-1002	0.00		
Massachusetts	Bedford	09/17 /88	Bd. of Health	Carla Priest	(508)275-6507	Clean Harbors	(508)655-8863	0.00		
Massachusetts	Somerville	09/17 /88	Health Dept	Paul Murphy	(617)625-6600	Clean Harbors	(508)655-8863	0.00		
Massachusetts	Brockton, 4 others	09/17 /88	Cons. Commiss.	Caroline Stone	(508)580-7167	NE Solvents	(508)683-1002	24200.00		
Massachusetts	Haverhill	09/17 /88	Bd. of Health	John Connor	(508)374-2382	NE Solvents	(508)683-1002	13990.00		
Massachusetts	Amherst	09/19 /88	Pioneer Planning Com	Alison Leacher	(413)781-6045	NE Solvents	(508)683-1002	0.00		
Massachusetts	Reading	09/24 /88	Bd. of Health	Ruth Cogan	(617)942-0500	Clean Harbors	(508)655-8863	11750.00	1,450 gallons	
Massachusetts	Wrentham	09/24 /88	Cons. Comm.	Maureen Osoluth	(508)585-1500	NE Solvents	(508)683-1002	0.00		
Massachusetts	Acton, 3 others	09/24 /88	Bd. of Health	Debbie Helko	(508)264-9634	NE Solvents	(508)683-1002	17475.00		
Massachusetts	Norfolk	10/01 /88	Bd. of Health	Janet Preavitt	(508)528-7747	NE Solvents	(508)683-1002	5300.00		
Massachusetts	Chatham	10/08 /88	Board of Health	Jane	(508)945-2100	NE Solvents	(508)683-1002	9275.00		
Massachusetts	Billerica	10/15 /88	N.Middlesex Commiss.	Robert W. Flynn	(508)454-8021	Clean Harbors	(508)655-1800	0.00		
Massachusetts	Peabody	10/15 /88	Board of Health	Peter Angeramo	(508)532-3000	NE Solvents	(508)683-1002	14000.00		
Massachusetts	Norwell	10/15 /88	Fire Department	Chief Cavanaugh	(617)659-2211	NE Solvents	(508)683-1002	10200.00		
Massachusetts	Dartmouth	10/22 /88	Cons.Commiss.	Robert College	(413)989-0722	Clean Harbors	(508)655-8863	0.00		
Massachusetts	Boxford, 2 others	10/22 /88	Town	Ira Singer	(508)777-3617	Clean Harbors	(508)655-8863	0.00		
Massachusetts	Weston	10/29 /88	Selectmen	Donna Vanderclark	(617)893-7320	Clean Harbors	(508)655-8863	0.00		
Massachusetts	Lexington	10/29 /88	Board of Health	George Smith	(617)862-0500	NE Solvents	(508)683-1002	28575.00		
Massachusetts	Watertown	10/29 /88	Health Dept.	Donna Moultrup	(617)484-2352	NE Solvents	(508)683-1002	17850.00		
Massachusetts	Canton	10/29 /88	Board of Health	Robert Enos	(617)821-5021	NE Solvents	(508)683-1002	14400.00		
Massachusetts	Winchester	11/05 /88	Bd. of Health	Joseph Tabbi	(617)721-7122	Clean Harbors	(508)655-8863	0.00		
Massachusetts	Middleborough	11/05 /88	Town	Donna Dean		Clean Harbors	(508)655-8863	0.00		
Massachusetts	Williamstown	11/05 /88	Town	Steven L. Ledous	(413)458-4839	NE Solvents	(508)683-1002	7525.00		
Massachusetts	Walpole	11/12 /88	Town	Robin Chapell	(617)668-5400	Clean Harbors	(508)655-8863	0.00		
Massachusetts	Dedham	11/12 /88	Town	Frank J. Scurti	(508)326-0540	Clean Harbors	(508)655-8863	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Massachusetts	Concord	11/12 /88	Board of Health	Carol Fox	(508)371-1034	NE Solvents	(508)683-1002	9550.00		
Massachusetts	Tewksbury	11/12 /88	Board of Health	Bill McMenimin	(508)851-6371	NE Solvents	(508)683-1002	8725.00		
Massachusetts	Weymouth	11/12 /88	Public Works Dept.	James Clarke	(617)335-2000	NE Solvents	(508)683-1002	20325.00		
Massachusetts	Norton, 3 others	11/19 /88	SRPEDD-Reg. Planning	Bill Napolitano	(508)824-1367	Clean Harbors	(508)655-8883	0.00		
Massachusetts	Barnstable	11/19 /88	Town	Russell Davenport	(508)775-1120	NE Solvents	(508)683-1002	13375.00		
Massachusetts	Amesbury	11/19 /88	Town	Therese Leblanc	(508)388-0428	NE Solvents	(508)683-1002	12225.00		
Massachusetts	Greenfield	11/19 /88	Town	Sandra Shields	(413)773-3578	NE Solvents	(508)683-1002	18800.00		
Massachusetts	Wilmington	12/03 /88	Town	Bob Palmer	(508)658-4481	NE Solvents	(508)683-1002	24675.00		
Massachusetts	North Reading	12/03 /88	Town	Joan Stevens	(508)664-5731	NE Solvents	(508)683-1002	1200.00		
Massachusetts	Nantucket	12/10 /88	Public Works Dept.	Elise Nawrocki	(508)228-7244	NE Solvents	(508)683-1002	28200.00		
Michigan	Ann Arbor	9Fal /84				Drug & Lab	(616)685-9824	0.00		
Michigan	Midland	10/20 /84	Dow Chemical					0.00	2884 lbs	88
Michigan	Traverse City	4Spr /85	Dow Chemical	Patti Temple	(517)636-5783			0.00		
Michigan	Midland	4Spr /85	Dow Chemical					0.00		
Michigan	Ann Arbor	9Fal /85				Drug & Lab	(616)685-9824	0.00		
Michigan	Ingham Cnty	9Fal /85				Drug & Lab	(616)685-9824	0.00		
Michigan	Kent City	9Fal /85	Dow Chemical					0.00		
Michigan	Oakland	9Fal /85	Dow Chemical					0.00		
Michigan	Saginaw	9Fal /85	Dow Chemical					0.00		
Michigan	Bay City	9Fal /85	Dow Chemical					0.00		
Michigan	Ingham County*	/86	County					0.00		
Michigan	Traverse City	4Spr /86				Dow Chemical		0.00		
Michigan	Ludington	4Spr /86				Dow Chemical		0.00		
Michigan	Alpena	8/07 /86	4th Dist Hlth Dept	Dick Silver	(571)356-4507	Drug & Lab	(616)685-9824	7220.00	1007 kg	55
Michigan	Detour/Sault(2)	8/18 /86	Chippewa Cnty Hlth	David Martin	(906)635-1566	Drug & Lab	(616)685-9824	14516.00	2016 kg	52
Michigan	Petoskey	8/23 /86	3rd Dist Hlth Dept	Burt Notestine	(616)347-6014	Drug & Lab	(616)685-9824	8862.00	2359 kg	131
Michigan	Holland Cnty	9/13 /86		Roger Stroh	(616)394-1365	Drug & Lab	(616)685-9824	16487.45	5528 kg	288
Michigan	Kent Cnty	9/13 /86	Cnty Hlth Dept	Katherine Sabine	(616)774-3694	Dow Chemical		0.00	3650 gals	539
Michigan	Calhoun Cnty	9/20 /86		Ted Haven	(616)966-1241	Dow Chemical		18347.00	8649 kg	301
Michigan	Genesee	9/27 /86	Health Dept	Tom Moore	(313)257-3603	Drug & Lab	(616)685-9824	10315.59	3339 kg	115
Michigan	Saginaw	10/01 /86		Patti Temple	(517)636-5783	Dow Chemical		0.00		
Michigan	Isabella Cnty	10/04 /86	Extension Office	Lyle Thompson	(517)772-0911	Drug & Lab	(616)685-9824	8010.82	2537 kg	97
Michigan	Ann Arbor	10/04 /86	Health Dept	David Pluddemann	(313)994-2566	Drug & Lab	(616)685-9824	0.00		
Michigan	Macomb Cnty	10/04 /86	Health Dept	Vaughan Wagner	(313)469-5236	Drug & Lab	(616)685-9824	0.00		
Michigan	Ingham Cnty*	4/08 /87				Drug and Lab	(616)685-9824	545.00		
Michigan	Ottawa Cnty	5 /87	Cnty of Ottawa	Pam Bayes		Drug & Lab	(616)685-9824	0.00		
Michigan	Grand Travers Cnty	5/02 /87	Cnty Coop Ext	Tim Johnson	(616)929-2108	Drug & Lab	(616)685-9824	4165.57		
Michigan	Monroe	5/09 /87	City of Monroe	Jim Naorr	(313)243-7155	Drug & Lab	(616)685-9824	6595.75		
Michigan	Kalamazoo	5/16 /87	Cnty of Kalamazoo	Dean Holub	(616)384-8112	Drug & Lab	(616)685-9824	22846.25		
Michigan	Midland	5/30 /87	City of Kenosha/DOW	Ted Ilgenfritz	(517)636-4620	DOW Chemical Co.	(517)636-4620	17000.00	3,135gal	237
Michigan	Alpena	6/06 /87	County	Richard Silver	(517)734-2198	Drug & Lab	(616)685-9824	7025.00		
Michigan	Holland	10/03 /87	City of Holland	Roger Stroh	(616)394-1365	Drug & Lab	(616)685-9824	8234.00		
Michigan	Hillsdale	10/10 /87	Branch/Hillsdale Co	Craig Laurent	(616)467-9835	Drug & Lab	(616)685-9824	6677.65		
Michigan	Traverse City	5/2 /87				Drug & Lab	(516)685-9824	0.00		
Michigan	Ingham County*	/88	County	Bob Caru	(517)887-6988	Drug & Lab	(616)685-9824	0.00		
Michigan	Macomb Cnty*	02/05 /88	Health Dept/county	Bob Mac Donald	469-5236	Spec'l Waste Systems		0.00		
Michigan	Kent County*	04/ /88	County	Donna Engstrom	(616)774-8892	Drug & Lab	(616)685-9824	0.00		
Michigan	Monroe County #	04/23 /88	Cnty	Chuck Cubbage	(517)373-1031	Drug & Lab	(616)685-9824	0.00	61 kg, 73 liters	26
Michigan	Delta/Menominee Cnty	04/30 /88	County	Jan VanAmberg	(906)786-4111	Drug & Lab	(616)685-9824	0.00		
Michigan	Washenaw*	05/ /88	Dept of Public Hlth.	Steve Manville	(313)994-2492	Drug and Lab, Inc.	(616)685-9824	0.00		
Michigan	St. Clair	05/07 /88		Lisa Blizinger	(313)987-4884	Drug & Lab	(616)685-9824	0.00		
Michigan	Eaton County	05/21 /88	County	Bob Shaeffer	(517)543-2430	Drug & Lab	(616)685-9824	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Michigan	Marquette County	05/21 /88	County	Frank Woodward	(906)475-4195	Drug & Lab	(616)685-9824	0.00		
Michigan	Kalamazoo County*	07/ /88	County	Dean Holub	(616)383-8883	Drug & Lab	(616)685-9824	0.00		
Michigan	Holland	10/01 /88	City	Roger Stroh	(616)394-1365	Drug & Lab	(616)685-9824	0.00		
Michigan	Allegan County #	10/08 /88	County	Bill Hinz	(616)673-5411	Drug & Lab	(616)685-9824	0.00	25 kgs., 100 liters	35
Michigan	Branch, 2 others	10/15 /88	Counties	Rhonda Sybesma	(616)685-9824	Drug & Lab	(616)685-9824	0.00		
Michigan	Livingston County #	10/15 /88	County	Chuck Cubbage	(517)373-1031	Drug & Lab	(616)685-9824	0.00		
Michigan	Chippewa,2others,2 dy	10/26 /88	Counties	Rhonda Sybesma	(616)685-9824	Drug & Lab	(616)685-9824	0.00		
Michigan	Upper Penins.,6cnty#	10/26 /88	Counties	Chuck Cubbage	(517)373-1031	Drug & Lab	(616)685-9824	0.00		
Michigan	St. John	10/29 /88	City	Roy Anklam	(517)224-7888	Drug & Lab	(616)685-9824	0.00		
Michigan	Traverse City #	11/03 /88	Cnty Extension Serv.	Chuck Cubbage	(517)373-1031	Drug & Lab	(616)685-9824	0.00	1800 kg., 12 liters	50
Michigan	Le Piere County	11/12 /88	County	Joyce Muz	(313)887-0201	Drug & Lab	(616)685-9824	0.00		
Michigan	NE Mich.,4 counties#	11/25 /88	Counties	Chuck Cubbage	(517)373-1031	Drug & Lab	(616)685-9824	0.00		
Minnesota	Inver Grove Hts	9/14 /85	BFI/City	John Sachi	(612)457-2111	CECOS		10000.00	1820 gals	165
Minnesota	Duluth/WLSSD	9/21 /85	MPCA	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	7400.00	1050 gals	304
Minnesota	St. Paul	10/12 /85	MPCA	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	9213.00	1985 gals	350
Minnesota	Benson	10/19 /85	MPCA	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	3350.00	220 gals	45
Minnesota	Winona Cnty	10/28 /85	MPCA	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	11825.00	1250 gals	210
Minnesota	Honeywell (4)	11/12 /85	Honeywell	Chuck Goedelman	(612)870-5575	NEI	(612)469-3475	14000.00	5000 lbs	80
Minnesota	Cannon Falls	4/26 /86	MPCA/local	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	9000.00	1330 gals	149
Minnesota	Roseville/Sperry	5/02 /86	MPCA/Sperry	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	14000.00	2450 gals	336
Minnesota	Bemidji	5/10 /86	MPCA/Cnty	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	5200.00	1180 gals	85
Minnesota	Northfield	5/17 /86	City of Northfield	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	4400.00	790 gals	105
Minnesota	Duluth (10 days)	6 /86	MPCA	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	6800.00	3665 gals	375
Minnesota	Mankato	6/07 /86	MPCA/local	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	10000.00	1886 gals	224
Minnesota	Winona	6/14 /86	MPCA	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	6500.00	975 gals	169
Minnesota	Slayton	6/21 /86	MPCA	Susan Ridgley	(612)297-1453	NEI	(612)469-3475	2100.00	260 gals	16
Minnesota	Inver Grove Hts	9/20 /86	BFI	John Sachi	(612)457-2111	CECOS		0.00	1425 gals	120
Minnesota	Hennepin Cnty	10/18 /86	Cnty	Greg Lie	(612)348-2556	NEI	(612)469-3475	82000.00	10376 gals	1100
Minnesota	Duluth (1/week)*	5 /87	WLSSD/EPA	Joe Stepun	(218)722-3336	NEI	(612)469-3475	0.00		
Minnesota	Hennepin(15)-3 wks	9/12 /87	Hennepin Cnty	Greg Lee	(612)348-2556	Chem Waste Mgt		401000.00	32661 gals	4400
Minnesota	Inver Grove Hts	9/19 /87	BF/Dakota Cnty	John Sachi	(612)457-2111	CECOS		0.00		
Minnesota	Willmar	9/18 /87	MPCA/EPA/Cnty	Ned Brooks	(612)296-7352	GSX Services		15000.00	1125 gals	248
Minnesota	St. Cloud	10/03 /87	MPCA/EPA/local	Ned Brooks	(612)296-7352	NEI	(612)469-3475	20000.00	1973 gals	369
Minnesota	Brainerd	10/17 /87	MPCA/local	Donna Portner	(612)296-7170	NEI	(612)296-7039	13025.00	1658 gal	288
Minnesota	Hastings	10/24 /87	MPCA/local	Donna Portner	(612)296-7039	NEI	(612)469-3475	13813.00	1804 gal + 80 lbs	288
Minnesota	Marshall	10/31 /87	MPCA/local	Donna Portner	(612)296-7039	NEI	(612)469-3475	8490.00	1420 gal	152
Minnesota	Eagan	11/07 /87	Sperry/Dakota Cnty	George Kinney				0.00		
Minnesota	Duluth	/88	WLSSD/EPA	Joe Stepun	(218)722-3336			0.00		
Minnesota	Ramsey	04/30 /88	City	Donna Portner	(612)296-7039	Aptus	(612)469-3475	4770.00		102
Minnesota	Clearwater County	05/07 /88	Cnty	Donna Portner	(612)296-7039	Aptus	(612)469-3475	3710.00		39
Minnesota	Moorhead	05/21 /88	Waste Oil Service	Donna Portner	(612)296-7039	Aptus	(612)469-3475	12000.00		84
Minnesota	McLeod County	06/04 /88	Cnty Fairgrounds	Donna Portner	(612)296-7039	Aptus	(612)469-3475	12000.00		239
Minnesota	Morrison County	06/11 /88	Cnty Public Works	Donna Portner	(612)296-7039	Aptus	(612)469-3475	12720.00		182
Minnesota	New London*	06/11 /88	Kandiyohi/MPCA	Ned Brooks	(612)296-7352	Aptus	(612)469-3475	0.00		
Minnesota	Dakota, 4 day/4 site	06/16 /88	Dakota County	George Kinney	(612)450-2793	APTUS	(612)469-3475	0.00		
Minnesota	Martin County	06/18 /88	Cnty Faigrounds	Donna Portner	(612)296-7352	Aptus	(612)469-3475	10500.00		353
Minnesota	Stevens County	06/25 /88		Donna Portner	(612)296-7352	Aptus	(612)469-3475	4770.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Minnesota	Two Harbors	07/30 /88	MPCA/Lake Cnty	Ned Brooks	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	Grand Marais, 2 day	08/13 /88	MPCA/Cook County	Ned Brooks	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	Cloquet	08/27 /88	MPCA/Carlton Cnty	Ned Brooks	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	Hennepin Cnty,5 site	09/10 /88	County	Loren Jenson	(612)348-8884			0.00		6500
Minnesota	Silver Bay	09/17 /88	MPCA/Lake Cnty	Ned Brooks	(612)569-3475	APTUS	(612)469-3475	0.00		
Minnesota	Grand Rapids	09/17 /88	MPCA/Itasca Cnty	Donna Portner	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	West St. Paul	09/17 /88	Dakota Cnty Health	George Kinney	(612)450-2793	CECOS	(513)881-5738	24345.00	46 55-gallon drums	700
Minnesota	Barnum	09/24 /88	MPCA/Carlton Cnty	Ned Brooks	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	Columbia Hts.	09/24 /88	MPCA/City	Donna Portner	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	Blue Earth	10/01 /88	MPCA/Faribault Cnty	Ned Brooks	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	Marshall*	10/15 /88	MPCA/Lyon County	Ned Brooks	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	Mankato	10/15 /88	MPCA/Blue Earth Cnty	Donna Portner	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	St. Paul*	10/15 /88	Ramsey County	Ray Erickson	(612)633-0318			0.00		
Minnesota	White Bear Lake	10/15 /88	Ramsey County	Ray Erickson	(612)633-0318			0.00		
Minnesota	Montevideo	10/22 /88	MPCA/Chippewa Cnty	Ned Brooks	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	St. James	10/22 /88	MPCA, Watonwan Cnty	Donna Portner	(612)296-6300	APTUS	(612)469-3475	0.00		
Minnesota	St. Peter	10/29 /88	MPCA/Nicollet,others	Donna Portner	(612)296-6300	APTUS	(612)469-3475	0.00		
Missouri	Cape Girardeau	10/01 /88	Dept Nat. Resources	Bruce Martin	(314)751-3176	Petro Chem Services	(314)521-3800	0.00		
Montana	Missoula&	10/18 /84	Sol.& Haz. Waste Bur	Roger C. Thorvilson	(406)444-2821	IT Corporation	(303)694-0044	109500.00	1873 gals	
Nebraska	Lincoln	6/08 /85	County	Richard Slama	(402)471-7800	GSX Services	(800)251-1227	0.00		41
Nebraska	Waverly	9/07 /85	County	Richard Slama	(402)471-7800	GSX Services	(800)251-1227	0.00		4
Nebraska	Lincoln	11/03 /85	County	Richard Slama	(402)471-7800	GSX Services	(800)251-1227	0.00		40
Nebraska	Lincoln	3/30 /87	Cnty Hlth Dept	Richard Slama	(402)471-7800	GSX Services	(800)251-1227	2500.00	567 lbs	14
Nebraska	Lincoln	04/29 /88	Cnty Health Dept	Richard Slama	(402)471-8037	Rollins	(312)260-9470	0.00	10,760 lbs	
Nebraska	Lincoln	04/30 /88	Cnty Health Dept	Richard Slama	(402)471-8037	Rollins	(312)260-9470	0.00	126 gal paint	
Nebraska	Lincoln (2 dy)	05/20 /88	Cnty Health Dept	Richard Slama	(402)471-8037	Rollins	(312)260-9470	0.00	3,592 lbs	
New Hampshire	Hartford (w/VT)	11/03 /84	Upper Valley Reg	Victor Jee	(603)643-5672	NE Marine Contr	(802)897-8800	0.00	1100 gals	109
New Hampshire	Dover	4/20 /85	Div Pub Hlth Srvcs			Coating Systems		0.00		
New Hampshire	Hanover	5/04 /85	Upper Valley RPC	Victor Jee	(603)643-5672	NE Marine Contr		6000.00	1375 gals	133
New Hampshire	Exeter	5/18 /85	Rockingham Cnty PC			Coating Systems	(603)883-0553	0.00		
New Hampshire	Salem	5/19 /85	Rockingham Cnty PC			Coating Systems	(603)883-0553	0.00		
New Hampshire	Manchester	4/26 /86	LVW	Anne McDonough	(603)668-1580	NE Solvents	(617)683-1002	22406.00	2675 gals	
New Hampshire	Bedford	4/26 /86	Conservation Comm	Carol Anderson	(603)472-8472	NE Solvents	(617)683-1002	8116.00	935	
New Hampshire	Exeter/Kingston	5/03 /86	Rockingham Cnty PC	Sara Campbell	(603)778-0856	Coating Systems	(603)883-0553	0.00	1400 gals	387
New Hampshire	Lebanon	5/03 /86	Lake Sunapee Cncl	Bob Verney	(603)448-1880	NE Marine Contr	(802)879-6800	11164.00	2080 gals	240
New Hampshire	Portsmouth	5/10 /86	Rockingham Cnty PC	Sara Campbell	(603)778-0885	Coating Systems	(603)883-0553	0.00		
New Hampshire	Cheshire Cnty	5/17 /86	SW RPC	Dean Shenkle	(603)357-1165	Coating Systems	(603)883-0553	9528.00		71
New Hampshire	Nashua/Milford	6/07 /86	Reg Sld Wste Dist	Maria Engel	(603)883-0366	Coating Systems	(603)883-0553	29534.00	3832 gals	300
New Hampshire	Conway	9/20 /86	Solid Waste Dist	John Walsh	(603)447-3811	Coating Systems	(603)883-0553	7832.00	1000 gals	42
New Hampshire	Concord	9/27 /86	Solid Waste Dist	Ron Ford	(603)225-8520	Coating Systems	(603)883-0553	14100.00	3445 gals	290
New Hampshire	Plaistow/Salem	10/18 /86	State/Rockingham	Sara Campbell	(603)778-0885	Coating Systems	(603)883-0553	0.00	2895 gals	156
New Hampshire	Epping/Raymond	10/25 /86	State/Rockingham	Sara Campbell	(603)778-0885	Coating Systems	(603)883-0553	0.00	2530 gals	87
New Hampshire	Rockingham Cty (3)	4/04 /87	Rockingham Cnty PC		(603)778-0885	Coating Systems	(603)883-0553	0.00		
New Hampshire	Rockingham Cty (3)	4/11 /87	Rockingham Cnty PC		(603)778-0885	Coating Systems	(603)883-0553	0.00		
New Hampshire	Rockingham Cty (3)	4/25 /87	Rockingham Cnty PC		(603)778-0885	Coating Systems	(603)883-0553	0.00		
New Hampshire	Lebanon	5/02 /87	Upper Valley Lake	Marike Petrich	(603)448-1880	NE Solvents	(617)683-1002	10950.00	30 drums	
New Hampshire	Rockingham Cty (3)	5/02 /87	Rockingham Cnty PC		(603)778-0885	Coating Systems	(603)883-0553	0.00		
New Hampshire	Newport	5/09 /87	Sullivan Cnty	Constance Leach	(603)543-1201	NE Solvents	(617)683-1002	7250.00	16 drums	
New Hampshire	Littleton	5/09 /87	N. County Council	Joanna Whitcomb	(603)823-5566	Clean Harbors	(617)849-1800	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
New Hampshire	Milford	5/16 /87	Nashua SWD&PC	Harry Smith	(603)883-0386	Coating Systems	(603)883-0553	0.00		
New Hampshire	Merrimack	5/16 /87	Nashua SWD&PC	Harry Smith	(603)883-0386	Coating Systems	(603)883-0553	0.00		
New Hampshire	Conway	6/06 /87	Town of Conway	John Walsh	(603)447-3811	Coating Systems	(603)883-0553	0.00		
New Hampshire	Nashua	6/13 /87	Nashua SWD&PC	Harry Smith	(603)883-0366	Coating Systems	(603)883-0553	0.00		
New Hampshire	Hudson	6/13 /87	Nashua SWD&PC	Harry Smith	(603)883-0366	Coating Systems	(603)883-0553	0.00		
New Hampshire	Meredith	8/29 /87	Lakes RPC	Kim Koulet	(603)279-8171	NE Solvents	(617)883-1002	9525.00	26 drums	
New Hampshire	Alton	8/29 /87	Lakes RPC	Kim Koulet	(603)279-8171	NE Solvents	(617)883-1002	3650.00	9 drums	
New Hampshire	New Boston	9/19 /87	New Boston Fire Dept	Mike Richard	(603)487-2158	NE Solvents	(617)883-1002	8783.00	26 drums	
New Hampshire	Hillsboro	9/19 /87	CVHTWA	Mark Scheel	(603)525-4182	NE Solvents	(617)883-1002	4858.33	12 drums	
New Hampshire	Peterborough	9/19 /87	CVHTWA	Mark Scheel	(603)525-4182	NE Solvents	(617)883-1002	11133.33	34 drums	
New Hampshire	Dover	9/26 /87	Strafford Cnty RPC	Stephen Burns	(603)742-2523	Coating Systems	(603)883-0553	0.00		
New Hampshire	Rochester	9/26 /87	Strafford Cnty RPC	Stephen Burns	(603)742-2523	Coating Systems	(603)883-0553	0.00		
New Hampshire	Concord	10/10 /87	Concord Pub Works	Steven Allyn	(603)225-8620	Clean Harbors	(617)849-1800	0.00		
New Hampshire	Rockingham Cnty-4wks	04/30 /88	City Planning Comm		(603)778-0885	Coating Systems, Inc	(603)883-0553	0.00		
New Hampshire	Hillsborough	05/07 /88	Nashua Plan. Comm.		(603)883-0386	Coating Systems	(603)883-0553	0.00		
New Hampshire	Grafton	05/07 /88	Upper Valley Council		(603)448-1880	NE Solvents	(508)683-1002	0.00		
New Hampshire	Claremont	06/04 /88	NA-VT SWP/Town	Denise Egbert	(603)543-1201	NE Solvents	(508)683-1002	9085.00	22 drums	
New Hampshire	New London	06/04 /88	NH-VT Sol Wst Proj	Denise Egbert		NE Solvents	(508)683-1002	11235.00	28 drums	
New Hampshire	Sullivan/Merrimac	06/04 /88	NA-VT SWP/Town	Denise Egbert	(603)543-1201	NE Solvents	(508)683-1002	21828.00	51 drums	128
New Hampshire	Carroll Cnty	06/04 /88	Town		(603)447-3811	Coating Systems	(603)883-0553	0.00		
New Hampshire	N London/Claremont	06/04 /88	Cnty Reg Refuse Disp			NE Solvents	(508)683-1002	0.00		
New Hampshire	Meredith	06/11 /88	Reg Plan Comm/2towns	Kim Koulet	(603)378-8171	NE Solvents	(508)683-1002	14825.00	38 drums	
New Hampshire	Bristol	06/11 /88	Lakes Reg Plan Comm	Kim Koulet	(603)744-2441	NE Solvents	(508)683-1002	14825.00	38 drums	
New Hampshire	Hillsborough (3)	06/11 /88	Nashua Plan Comm		(603)883-0386	Coating Systems	(603)883-1002	0.00		
New Hampshire	Belknap	06/11 /88	Lakes Reg Plan Comm		(603)279-8171	NE Solvents	(508)683-1002	0.00		
New Hampshire	New Boston	08/24 /88	Town	Michael Richards	(603)487-2158			0.00		
New Hampshire	Concord	10/01 /88	City	Joseph Musumeci	(603)225-8630	Clean Harbors	(508)655-8863	0.00		
New Hampshire	Gilford	10/01 /88	Lakes Reg Planng.	Cathleen Cavanaugh	(603)524-6284	Clean Harbors	(508)655-8863	10250.00		
New Hampshire	Rochester	10/01 /88	Strafford Reg.Planng	Stephen Burns	(603)742-2523			0.00		
New Hampshire	Jaffrey, 2 others	10/22 /88	Ashuelot Valley	Joan Dittrich	(603)363-4320			0.00		
New Jersey	Morris Cnty	5/18 /85	DEP,County	Ralph Davis	(609)292-8341	Adv Env Tech Corp	(201)347-7111	5439.00		
New Jersey	Hunterdon Cnty	5/18 /85	DEP,County	Ralph Davis	(609)292-8341	Radiac Research	(718)963-2233	24000.00		190
New Jersey	Gloucester Cnty	6/18 /85	DEP,County	Ralph Davis	(609)292-8341			10000.00		
New Jersey	Morris Cnty	10/05 /85	DEP,County	Ralph Davis	(609)292-8341			8690.00		
New Jersey	Somerset Cnty	10/19 /85	DEP,County	Ralph Davis	(609)292-8341			11000.00		
New Jersey	Burlington Cnty	10/26 /85	DEP,County	Ralph Davis	(609)292-8341	Adv Env Tech Corp	(201)347-7111	13408.00		
New Jersey	Atlantic Cnty	11/09 /85	DEP,County	Ralph Davis	(609)292-8341			9225.00		
New Jersey	Union Cnty	11/23 /85	DEP,County	Ralph Davis	(609)292-8341			11000.00		
New Jersey	Monmouth Cnty	04/19 /86	DEP,County	Ralph Davis	(609)292-8341	Radiac Research	(718)963-2233	28810.00		
New Jersey	Cumberland Cnty	10/04 /86	DEP,County	Ralph Davis	(609)292-8341	Radiac Research	(718)963-2233	0.00		
New Jersey	Somerset Cnty	10/11 /86	DEP,County	Ralph Davis	(609)292-8341	Radiac Research	(718)963-2233	0.00		
New Jersey	Hunterdon Cnty	10/18 /86	DEP,County	Ralph Davis	(609)292-8341	Radiac Research	(718)963-2233	0.00		
New Jersey	Burlington Cnty	10/25 /86	DEP,County	Ralph Davis	(609)292-8341	Radiac Research	(718)963-2233	0.00		
New Jersey	Morris Cnty	10/25 /86	DEP,County	Ralph Davis	(609)292-8341	Adv Env Tech Corp	(201)347-7111	0.00		
New Jersey	Atlantic Cnty	11/15 /86	DEP,County	Ralph Davis	(609)292-8341	Radiac	(718)963-2233	0.00		
New Jersey	Hunterdon Cnty	04/ /87	County	Ralph Davis	(609)292-8341	Radiac	(718)963-2233	0.00		
New Jersey	Union Cnty	05/ /87	County	Ralph Davis	(609)292-8341	Radiac	(718)963-2233	0.00		
New Jersey	Sussex Cnty	07/ /87	County	Ralph Davis	(609)292-8341	Adv Env Tech Corp	(201)347-7111	0.00		
New Jersey	Hanover	05/14 /88	Morris Sol Wste Mgmt	Larry Gindoff	(201)285-0903	Adv Env Tech Corp	(201)347-7111	25000.00		120
New Jersey	Monmouth	05/14 /88	Health Dept/Cnty	Walt Strausec	(201)431-7456	Radiac	(609)292-8341	55000.00	33,885 lbs	250
New Jersey	Flemington	06/04 /88	Hunterdon Cnty	Therese Martin	(201)788-1110	Radiac	(609)292-8341	0.00		
New Jersey	Westfield	10/01 /88	Union Cnty	Joanne Gemenden	(201)527-4215	Radiac	(609)292-8341	0.00	40,000 lbs	310
New Jersey	Tinton	10/08 /88	Monmouth Health Dep	Walt Strausec	(201)431-7456	Radiac	(609)292-8341	45000.00	34,650 lbs	325
New Jersey	Bridgewater	10/22 /88	Somerset Solid Wste	Lisa Gordon	(201)231-7031	Adv Env Tech Corp	(201)347-7111	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
New Jersey	Westamtton Twshp.	10/29 /88	Burlington Cnty	Anne Moore	(609)265-5107	Waste Conversion		0.00		
New Jersey	Flemington	11/05 /88	Hunterdon Cnty	Theresa Martin	(201)788-1110	Radiac	(609)292-8341	0.00		
New Jersey	Burleigh	11/12 /88	Cape May Cnty	Tom Moncman	(609)465-8388	Radiac	(718)963-2233	0.00		
New Jersey	Lyndonwold	11/19 /88	Camden Solid Waste	Jack Sworaski	(609)757-6914	Radiac	(718)963-2233	0.00		
New Jersey	Lafayette Twnship	12/10 /88	Sussex County	John Cannata	(201)579-6898			0.00		
New Mexico	Albuquerque&	10/18 /85	Bernalillo Cnty	Donna Lacombe	(505)766-7434	GSX Services		87213.00		1071
New York	Broome Cnty#	6/19 /82	Cnty Env Council	Claudia Stalman	(607)772-2114	SCA Chemical		1600.00	605 gals	98
New York	Niagara	4Spr /83	SCA/Cecos					0.00		
New York	Oneida	4Spr /83				SCA		2300.00	980 gals	128
New York	Broome Cnty#	6/04 /83	Cnty Env Council	Claudia Stalman	(607)772-2114	SCA Chemical		1900.00	770 gals	60
New York	Rockland Cnty	9Fal /83		Barbara Porta	(914)354-0200			0.00	2080 gals	200
New York	Oneida	4Spr /84		Hans Arnold	(315)798-5713	GSX Services	(800)334-5953	2500.00	1100 gals	
New York	Columbia	4Spr /84		Ronald Vosburgh	(518)828-3375	SCA		23300.00	5775 gals	35
New York	Onondaga	4Spr /85		Dave Colburn	(315)425-2640	GSX Services	(800)334-5953	0.00		
New York	Oswego	4Spr /85		Bob Shearer	(315)349-3270			0.00		
New York	Schenectady	4Spr /85		Denise Cashmere	(518)382-3286			0.00	1320 gals	154
New York	Islip (2)	4Spr /85						0.00		
New York	Westchester Cnty	4Spr /85	County	Liz Hendrick	(914)285-5044	Chem Poll Cntrl		0.00	1100 gals	
New York	Broome Cnty#	6/01 /85	Cnty Env Council	Claudia Stalman	(607)772-2114	GSX Services	(800)334-5953	5826.78	2450 lbs	111
New York	Rockland Cnty	9Fal /85	County	Barbara Porta	(914)354-0200	GSX Services	(800)334-5953	0.00		
New York	Long Island (4)	9Fal /85						0.00		
New York	Long Island (3)	4Spr /86						0.00		
New York	Duchess	4Spr /86		Bonnie McLeod	(914)677-3488			0.00		
New York	Broome Cnty	5/17 /86	County	Claudia Stalman	(607)772-2114	GSX Services	(800)334-5953	9000.00	1580 lbs	107
New York	Hempstead	6/05 /86	NYS DEC	Patricia McKenna	(516)378-4210	CECOS	(716)873-4200	0.00		
New York	East Norwich	9/06 /86	NYSDEC	Eric Swenson	(516)921-7346	Chem Poll Cntrl	(516)586-0333	7650.00	26 drums	62
New York	N. Massapequa	9/20 /86	NYSDEC	Eric Swenson	(516)921-7348	Chem Poll Cntrl	(516)586-0333	7450.00	26 drums	70
New York	Huntington	9/27 /86	NYSDEC	Janet Dieterich	(516)361-3186	Chem Poll Cntrl	(516)586-2331	0.00		
New York	Westchester Cnty	9Fal /86				GSX Services	(800)334-5953	0.00		
New York	Hicksville	10/04 /86	NYSDEC	Eric Swenson	(516)921-7346	Chem Poll Cntrl	(516)586-0333	8150.00	30 drums	105
New York	East Setauket	10/11 /86	NYSDEC	Chick Voorhis	(516)654-7914	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Ridge	10/18 /86	NYSDEC	Chick Voorhis	(516)654-7914	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Roslyn	10/18 /86	NYSDEC	Clyde Parro	(516)621-0906	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Holtsville	10/25 /86	NYSDEC	Chuck Voorhis	(516)654-7914	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Riverhead	11/08 /86	NYSDEC	George Bartunek	(516)727-3097	Chem Poll Cntrl	(516)586-0333	0.00		
New York	New Hyde Park	11/08 /86	NYSDEC	Clyde Parro	(516)621-0906	Chem Poll Cntrl	(516)586-0333	0.00		
New York	North Sea	11/22 /86	NYSDEC	Jim McCulley	(516)283-6000	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Sag Harbor	11/22 /86	NYSDEC	Jim McCulley	(516)283-6000	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Hampton Bays	12/06 /86	NYSDEC	Jim McCulley	(516)283-6000	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Westhampton	12/06 /86	NYSDEC	Jim McCulley	(516)283-6000	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Southold	12/06 /86	NYSDEC	Jim McMann	(516)765-1892	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Southampton	12/06 /86	NYS DEC	Jim McCulley	(516)283-6055	Chem Poll Cntrl	(516)586-0333	0.00		
New York	North Hempstead	3/28 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Oyster Bay	4/25 /87	NYS DEC	Eric Swenson	(516)921-7347	Chem Poll Cntrl	(516)586-0333	8675.00	1375 gals	46
New York	North Hempstead	4/25 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Huntington	5/02 /87	NYS DEC	Janet Dietrich	(516)361-3186	Chem Poll Cntrl	(516)586-0333	10000.00	1705 gals	120
New York	Hempstead	5/09 /87	NYS DEC	Patricia McKenna	(516)378-4210	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Oyster Bay	5/16 /87	NYS DEC	Eric Swenson	(516)921-7347	Chem Poll Cntrl	(516)586-0333	9725.00	2145 gals	127
New York	Shelter Island	5/23 /87	NYS DEC	Heather Reylock	(516)749-0293	Chem Poll Cntrl	(516)586-0333	7800.00	1210 gals	87
New York	North Hempstead	5/30 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Southampton	6/20 /87	NYS DEC	Jim McCulley	(516)283-6055	Chem Poll Cont	(516)586-0333	0.00		
New York	Oyster Bay	6/26 /87	NYS DEC	Eric Swenson	(516)921-7347	Chem Poll Cntrl	(516)586-0333	9025.00	1925 gals	96
New York	North Hempstead	6/27 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Southampton	7/18 /87	NYS DEC	Jim McCulley	(516)283-6055	Chem Poll Cntrl	(516)586-0333	0.00		
New York	North Hempstead	7/26 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
New York	North Hempstead	8/29 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Oyster Bay	9/19 /87	NYS DEC	Eric Swenson	(516)921-7347	Chem Poll Cntrl	(516)586-0333	5825.00	1045 gals	62
New York	North Hempstead	9/26 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Islip	10/03 /87	NYS DEC	Frank Smith	(516)224-5600	Chem Poll Cntrl	(516)586-0333	0.00		
New York*	Grand Island	10/10 /87	Town of Grand Island	Marion Sabino		CECOS	(716)873-4200	6000.00	660 gals	40
New York	Oyster Bay	10/17 /87	NYS DEC	Eric Swenson	(516)921-7347	Chem Poll Cntrl	(516)586-0333	7025.00	1485 gals	132
New York	Hempstead	10/17 /87	NYS DEC	Patricia McKenna	(516)378-4210	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Brooklyn	10/17 /87		Cyprian Cox	(212)860-8924	Clean Harbors	(617)855-8863	0.00		
New York	Putnam County	10/17 /87	NYS DEC	Larry Werper		Rediac Research	(718)963-2233	0.00		
New York	Brookhaven	10/24 /87	NYS DEC	John Pavacic	(516)543-4444	Chem Poll Cont	(516)586-0333	0.00		
New York	North Hempstead	10/31 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Brookhaven	10/31 /87	NYS DEC	John Pavacic	(516)543-4444	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Brookhaven	11/07 /87	NYS DEC	John Pavacic	(516)543-4444	Chem Poll Cont	(516)586-0333	0.00		
New York	Oyster Bay	11/14 /87	NYS DEC	Eric Swenson	(516)921-7347	Chem Poll Cntrl	(516)586-0333	0.00		
New York	North Hempstead	11/21 /87	NYS DEC	Rhoda Becker	(516)627-0590	Chem Poll Cntrl	(516)586-0333	0.00		
New York	Southold*	/88		Tanya Harmas	(516)751-7900			0.00		
New York	North Hempstead	03/26 /88	STOP/town					0.00		
New York	Glen Head	03/26 /88	STOP/Oyster Bay	Sophia Morris	(516)751-7900			0.00		
New York	Massapequa	04/16 /88	STOP/Oyster Bay	Sophia Morris	(516)751-7900			0.00		
New York	Roslyn	04/30 /88	STOP/N.Hempstead	Sophia Morris	(516)751-7900			0.00		
New York	Huntington	04/30 /88	STOP/Hungtington	Sophia Morris	(516)751-7900			0.00		
New York	Hempstead	05/14 /88	Town of Hemstead	Mr. James Heil	(516)378-4210	CECOS International	(201)248-0800	28000.00	50 drums	180
New York	Riverhead	05/14 /88	STOP/Riverhead	Sophia Morris	(516)751-7900			0.00		
New York	Shelter Island	05/14 /88	STOP/Shelter Island	Sophia Morris	(516)751-7900			0.00		
New York	Syosset	05/21 /88	STOP/Oyster Bay	Sophia Morris	(516)751-7900			0.00		
New York	Niagra Falls	06/04 /88	City/2 towns/CECOS	David Brooks	(716)286-4466	CECOS	(513)681-5738	50000.00		150
New York	Westchester	06/11 /88	Cnty DEH	Carlos Torrez	(914)285-5038	Rediac		0.00		
New York	Setauket	06/11 /88	Brookhaven	John Pavacic	(516)451-6455	Chem Pollu. Control	(516)586-0333	12500.00	36 drums	108
New York	Peekskill	06/11 /88	Westchester Cnty	Caroles Torres	(914)285-5038	Rediac	(718)963-2233	60000.00	68 drums	100
New York	Massapequa	06/18 /88	Oyster Bay	Jim McAllister	(516)921-7347	Chem Pollu. Con.	(516)586-0333	13000.00	43 drums	165
New York	Islip	06/25 /88	Town	Frank Smith	(516)224-5640	Chem Pollu. Control	(516)586-0333	5700.00	20 drums	40
New York	Carle Place	06/25 /88	N. Hempstead	Rhoda Becker	(516)627-0590	Chem Pollu. Control	(516)586-0333	11000.00	37 drums	188
New York	Bayshore	07/16 /88	Town of Islip	Frank Smith	(516)224-5640	Chem Poll. Control	(516)586-0333	9000.00	27 drums	148
New York	Great Neck	07/31 /88	N. Hempstead	Rhoda Becker	(516)627-0590	Chem Pollu. Control	(516)586-0333	10000.00	46 drums	138
New York	Rocky Point	08/13 /88	Brookhaven	John W. Povacic	(516)451-6455	Chem Pollu. Control	(516)586-0333	10000.00	30 drums	98
New York	Plainview	08/20 /88	Oyster Bay	Eric Swenson	(516)921-7347	Chem Pollu. Control	(516)586-0333	13000.00	54 drums	207
New York	Manhasset/Lakeview	08/27 /88	N. Hempsteac	Rhoda Becker	(516)627-0590	Chem Pollu. control	(516)586-0333	10000.00	36 drums	140
New York	Ridge	09/17 /88	Brookhaven	John Povacic	(516)451-6455	Chem Pollu. Control	(516)586-0333	9500.00	22 drums	70
New York	Erie County #	09/17 /88	Cnty Env. Dept.	Rick Tobe	(716)846-6555	CECOS	(713)584-8824	12000.00	25 drums	248
New York	Holbrook	09/24 /88	Islip	Mr. Bartholcmew	(516)224-5640	Chem Pollu. Control	(516)586-0333	7000.00	43 drums	
New York	New Hyde Park	09/24 /88	N. Hempstead	Rhoda Becker	(516)627-0590	Chem Pollu. Control	(516)586-0333	7630.00	34 drums	229
New York	E. Norwich	09/24 /88	Oyster Bay	Eric Swenson	(516)921-7347	Chem Pollu. Control	(516)566-0333	12000.00	33 drums	131
New York	East Norwich	09/24 /88	STOP/Oyster Bay	Sophia Morris	(516)751-7900			0.00		

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HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
New York	Riverhead	10/01 /88	Town	Joseph Janowski	(516)727-3200	Chem Pollu. Control	(516)586-0333	0.00	13 drums	13
New York	Pomona, 2 dy	10/01 /88	Rockland Cnty	Sharon Rehder	(518)457-7287	CECOS	(713)564-8824	0.00		
New York	Rockland County	10/01 /88	Rockland Cnty	Barry Stangel	(914)354-0200	GSX	(800)845-1019	60000.00		430
New York	Lindenhurst	10/08 /88	Town of Babylon	Sharon Rehder	(518)457-7287	Chem Pollu. Control	(516)586-0333	0.00		
New York	N. Massapequa	10/15 /88	Oyster Bay	Eric Swanson	(516)921-7347	Chem Pollu. Control	(516)586-0333	0.00		
New York	Valhalla	10/22 /88	Westchester Cnty	Carlos Torres	(914)286-5038	Advanced Technology	(201)347-7111	0.00		
New York	N. Babylon	10/22 /88	Town of Babylon	Evan Liblit	(516)422-7640	Chem Pollu. Control	(516)586-0333	0.00		
New York	Centereach	10/22 /88	Brookhaven	John Povacic	(516)451-6455	Chem Pollu. Control	(516)586-0333	0.00		
New York	Hempstead	10/22 /88	Hempstead	Sharon Rehder	(518)457-7287	CECOS	(713)564-8824	0.00		
New York	Glen Cove	10/29 /88	City	Sharon Rehder	(518)457-7287	Chem Pollu. Control	(516)586-0333	0.00		
New York	Carle Place	10/29 /88	N. Hempstead	Rhoda Becker	(516)627-0590	Chem Pollu. Control	(516)586-0333	0.00		
New York	Huntington	11/05 /88	Town	Sharon Rehder	(518)457-7287	Chem Pollu. Control	(516)586-0333	0.00		
New York	Bay Shore	11/05 /88	Town of Islip	Frank Smith	(516)224-5640	Chem Pollu. Control	(516)586-0333	0.00		
New York	Smithtown	11/12 /88	Town	Sharon Rehder	(518)457-7287	Chem Pollu. Control	(516)586-0333	0.00		
New York	Port Washington	11/19 /88	N. Hempstead	Rhoda Becker	(516)627-0590	Chem Pollu. Control	(516)586-0333	0.00		
New York	Hicksville	11/19 /88	Oyster Bay	Jim McAllister	(516)921-7347	Chem Pollu. Control	(516)586-0333	0.00		
North Carolina	Reidsville	4 /85	GSX Services	Ken Webb	(800)334-5953	GSX Services	(800)334-5953	0.00	3850 lbs	
North Carolina	Eden	4 /85	GSX Services	Ken Webb	(800)334-5953	GSX Services	(800)334-5953	0.00	2720 lbs	
Ohio	Cincinnati	9Fal /84	Cecos	Pete Kiniklis	(513)681-5738	Cecos	(513)681-5738	0.00		
Ohio	Canton	9Fal /84	LWV of OH	Patricia Starr	(216)499-3857			0.00		
Ohio	Cleveland* (1/mo.)	5 /86	Oncl on Haz Mat'ls	Bob Staib	(216)961-4646	Samsel Srvcs	(216)861-3849	50000.00	120 lbs	120
Ohio	Cleveland Heights	04/09 /88		Bob Staise	(216)981-4646	CECOS	(513)681-5738	19825.00	34 drums	270
Oregon	Gresham	9Fal /82	Gresham Fire Dept	Len Malmquist	(503)661-3000			0.00		
Oregon	Gresham	4Spr /83	Fire Dept	Len Malmquist	(503)661-3000	Pegasus	(800)354-9033	0.00		
Oregon	Gresham	4Spr /84	Fire Dept	Len Malmquist	(503)661-3000	Pegasus	(800)354-9033	0.00		
Oregon	Lane Cnty	5/10 /86	Sld Waste Dist	Mike Turner	(503)687-4119	Pegasus	(800)354-9033	0.00		
Oregon	Portland/Gresham	11/15 /86	Portland Fire Dept	Len Malmquist	(503)221-1646	Pegasus	(800)354-9033	83583.00	101 drums	455
Oregon	Gresham	4Spr /87	Gresham Fire Dept	Len Malmquist	(503)661-3000	Pegasus	(800)354-9033	0.00		
Oregon	Lane Cnty	5/09 /87	Lane Cnty	Mike Turner	(503)687-4119	Pegasus	(800)354-9033	13400.00	22 drums	77
Oregon	Portland (4)	05/14 /88	Metro Service Dist.	Kathy Thomas	(503)221-1646	Chem Process	(800)354-4338	164317.42	498 drums	1176
Oregon	Lane County	05/21 /88	County	Mike Turner	(503)687-4338	Pegasus	(800)354-9033	0.00		106
Oregon	Portland	10/01 /88	Metro Service Dist.	Rob Smoot	(503)221-1646			0.00		
Pennsylvania	York Cnty	10/18 /85	LWV/Sld Wste Auth	Karen Stewart	(717)246-3488	GSX Services	(800)638-4440	62000.00	9250 gals	560
Pennsylvania	York Cnty	10/09 /86	LWV/Sld Wste Auth	Karen Stewart	(717)246-3488	GSX Services	(800)638-4440	50000.00	11000 gals	558
Pennsylvania	Philadelphia	10/ /87	Cty/LWV/Health Dept	John Hodelski	(215)686-7114	Chem Waste Mgmt	(312)396-1050	0.00		
Pennsylvania	York Cnty	10/15 /87	County	Bill Ehrman	(717)845-1066	GSX Services	(800)638-4440	0.00	275 drums	829
Pennsylvania	Radnor	05/14 /88	Town	Robert Crawford	(215)688-5600	GSX	(800)845-1019	0.00		
Pennsylvania	Hatfield	08/11 /88	Town/Wst Conversion	Randy Royer	(215)822-8996	Waste Conversion,Inc	(215)822-6996	0.00		
Pennsylvania	York (3 days)	10/06 /88	Cnty	Mary Jane Radcliff	(717)845-1066	GSX	(800)845-1019	0.00		
Pennsylvania	Westowne Square	10/29 /88	ARCO Corp.	Jim Borchuk		GSX	(800)845-1019	0.00		
Pennsylvania	Buck County	fall /88	Cty/LWV/Health Dept	John Hodelski	(215)686-7114	Chem Waste Mgmt	(312)396-1050	0.00		

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Rhode Island	Cranston	9/22 /84	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	0.00		189
Rhode Island	S. Kingston	9/29 /84	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	0.00		125
Rhode Island	Cumberland	10/13 /84	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	0.00		183
Rhode Island	Portsmouth	10/20 /84	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	0.00		124
Rhode Island	Providence	10/27 /84	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	0.00		182
Rhode Island	Pawtucket	12/12 /85	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	5673.00		89
Rhode Island	Westerly	12/12 /85	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	4802.00		37
Rhode Island	Middletown	12/12 /85	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	11164.00		215
Rhode Island	Warwick	12/12 /85	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	16156.00		304
Rhode Island	N. Kingston	5/10 /86	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	7285.00		186
Rhode Island	Smithfield	5/19 /86	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	9057.00		187
Rhode Island	E. Providence	5/30 /86	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)946-0200	8581.00		210
Rhode Island	Providence	11/22 /86	R.I. D.E.M.	Felix Harvey	(401)277-2787	McDonald & Watson	(401)942-0200	23318.00		425
Rhode Island	Johnston	9/12 /87	RI DEM	Felix Harvey	(401)277-2787	Clean Harbors	(617)849-1800	39200.00		320
Rhode Island	Newport	9/19 /87	RI DEM	Felix Harvey	(401)277-2787	Clean Harbors	(617)849-1800	35800.00		175
Rhode Island	Little Compton	9/19 /87	RI DEM	Felix Harvey	(401)277-2787	Clean Harbors	(617)849-1800	8700.00		45
Rhode Island	Woonsocket	9Fal /87	State	Alicia Good	(401)277-2787	Clean Harbors	(617)849-1800	23678.00		220
Rhode Island	Charlestown	9Fal /87	State	Alicia Good	(401)277-2787	Clean Harbors	(617)849-1800	15000.00		160
Rhode Island	Coventry	9Fal /87	State	Alicia Good	(401)277-2787	Clean Harbors	(617)849-1800	30000.00		380
Rhode Island	Block Island	9Fal /87	State	Alicia Good	(401)277-2787	McDonald & Watson	(401)492-0200	15000.00		95
Rhode Island	East Greenwich	05/07 /88	RI DEM	Terrance Grey	(401)277-2787	Clean Harbors	(508)849-1800	40000.00	33dr,42pac ,345ca	35cont
Rhode Island	Providence	05/14 /88	RI DEM	Terrance Grey	(401)277-2787	Clean Harbors	(508)849-1800	62000.00	73dr,41pac ,605ca	87cont
Rhode Island	Warwick	06/25 /88	DEM/town	Terrance Grey	(401)277-2787	Clean Harbors	(508)655-8863	0.00		
Rhode Island	Barrington	09/10 /88	DEM/town	Terrance Grey	(401)277-2787	Clean Harbors	(508)655-8863	0.00		
Rhode Island	South Kingston	10/15 /88	DEM/town	Terrance Grey	(401)277-2787	Clean Harbors	(508)655-8863	0.00		
South Caroline	Orangeburg	12/07 /88	GSX is sponsor	Liz McCormack	(800)845-1019	GSX	(800)845-1019	0.00		
South Dakota	Pierre	09/08 /86	Air Qual & Sld Wste	Vonni Kallemeyn	(605)773-3153	Sunbelt Environ.	(405)348-5080	30000.00	11223 lbs	74
Tennessee	Robertson Cnty (3)	4Spr /86	GSX Services	Bill Clarke	(800)251-1227	GSX Services	(800)251-1227	0.00		
Texas	Austin	4/01 /88	City	Liz Badger	(512)499-2550	Cecos		58950.00	8470 gals	460
Texas	Brazosport	4Spr /86	Dow Chemical	Marilee Goode	(409)238-2805	Dow Chemical	(409)238-2805	7000.00	1700 lbs	
Texas	Beaumont	10/04 /86	Env Qual Cncl	Scott Nicholson	(409)736-2821	Chem Waste Mgt	(409)736-2821	0.00		
Texas	Jefferson	10/11 /86	Env Qual Cncl	Scott Nicholson	(409)736-2821	Chem Waste Mgt	(409)736-2821	0.00		
Texas	Port Acres	10/18 /86	Env Qual Cncl	Scott Nicholson	(409)736-2821	Chem Waste Mgt	(409)736-2821	0.00		
Texas	Orange	10/25 /86	Env Qual Cncl	Scott Nicholson	(409)736-2821	Chem Waste Mgt	(409)736-2821	0.00		
Texas	Austin (2 days)	4/11 /87	City of Austin	Jim Eldred	(512)499-2834	GSX Services	(214)942-9228	59308.00	120 drums	650
Texas	Brazosport (3)	4/11 /87	DOW Chemcial Co.	Marilee Goode	(409)238-2805	DOW Chemcial Co.	(409)238-2805	11880.00	5986 lbs	159
Texas	Austin	04/23 /88	City,Sierra Club	Elizabeth Badger	(512)499-2787	GSX	(800)845-1019	61775.00	167 drums	914
Texas	Deer Park	08/11 /88	Rollins Env Services	Marshall Smith	(713)479-6001	Rollins	(713)479-6001	0.00		
Texas	Jefferson 4wk x (3)	10/ /88	County	Scott Nicholson		Chem Waste Mgmt	(409)736-2821	0.00		
Texas	Orange 4wk x (3)	10/ /88	County	Scott Nicholson		Chem Waste Mgmt	(409)736-2821	0.00		
Texas	Texas City,Galveston	Fall/ /88	Union Carbide/City	Robert O'Brian	(409)948-5226	Chem Waste Mgmt	(312)572-9800	0.00		
Utah	Tooele County	6/01 /86	County	David Lawrence	(801)882-5550	USPCI	(405)324-5066	0.00		
Utah	Salt Lake City	8/21 /86	County Health Dept.	Jeff Throckmorton	(801)534-4519	USPCI	(405)324-5066	28000.00	1180 gals	75
Vermont	Hartford (w/NH)	11/03 /84	Upper Valley RPC	Victor Jas	(603)643-5672	NE Marine Contr	(802)879-8800	5000.00	1100 gals	110
Vermont	Hanover (NH)	5/04 /85	Upper Valley Region			NE Marine Contr	(802)879-8800	8000.00	1375 gals	133
Vermont	Middlebury	5/18 /85	Town	Betty Wheeler	(802)388-4041	NE Marine Contr	(802)879-8800	5000.00	1000 gals	90
Vermont	Lebanon (NH)	5/03 /86	Upper Valley Region	Victor Jas	(603)643-5672	NE Marine Contr	(802)879-8800	0.00		
Vermont	Rutland	5/10 /86	Rutland SWD	James Dohrman	(802)775-6482	NE Solvents	(617)683-1002	13525.00	1904 gals	
Vermont	Springfield	5/17 /86	Sld Waste Dist	Connie Leach	(603)543-1201	NE Solvents	(617)683-1002	0.00		
Vermont	Lyndonville	5/17 /86	Lyndonville	Charles Browne	(802)748-2372	NE Marine Contr	(802)879-8800	7800.00	1155 gals	55
Vermont	Waitsfield/Warren	10/04 /86	Town of Warren	Nancy Colby	(802)496-2978	NE Marine Contr	(802)879-8800	3000.00	7 drums	45

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Vermont	Rutland County	5/16 /87	Rutland County SWD	James Dohrman	(802)775-8482	NE Solvents	(617)683-1002	7450.00	935 gals	
Vermont	S. Windsor Cnty	5/17 /87	S. Windsor Cnty			NE Solvents	(617)683-1002	10000.00	1375 gals	80
Vermont	Rockingham/Weather	10/24 /87	NH/VT Sol. Waste Pro	Connie Leach	(603)543-1201	NE Solvents	(617)683-1002	0.00		
Vermont	Windsor/Windham	06/04 /88	NH-VT Sol Wst Proj	Denise Egbert	(603)543-1201	NE Solvents	(508)683-1002	0.00	see NH	
Vermont	Brattleboro	08/27 /88	Wyndham Waste Dist.	Paul Lorence	(802)257-0272	NE Solvents	(508)683-1002	11900.00		
Virginia	Fairfax Cnty	10/28 /85	County	Robin Bird	(703)691-3381	GSX Services	(919)342-6106	0.00		
Virginia	Arlington County*	/86	County					0.00		
Virginia	Fairfax Cnty	4 /86	County	Melanie Pearson	(703)246-2331	Rollins Env		0.00		
Virginia	Chesterfield Cnty	10/04 /86	County	Susan Craik	(804)748-5878	GSX Services	(919)342-6106	0.00	7125 lbs	
Virginia	Arlington County*	/87	County					0.00		
Virginia	Fairfax County	5/08 /87	Fairfax County	Melanie Pearson	(703)246-2331	GSX	(301)953-9583	0.00		900
Virginia	Fairfax County	5/30 /87	Fairfax County	Melanie Pearson	(703)246-2331	GSX	(301)953-9583	0.00		900
Virginia	Fairfax County	9/26 /87	Fairfax County	Melanie Pearson	(703)246-2331	GSX	(301)953-9583	0.00		700
Virginia	Fairfax County	10/03 /87	Fairfax County	Melanie Pearson	(703)246-2331	GSX	(301)953-9583	0.00		700
Virginia	Portsmouth	10/10 /87	S.E. Public Ser.Auth	Jennifer Ladd	(804)420-4700	GSX	(800)251-1227	20000.00	2145 gals	100
Virginia	Norfolk	10/24 /87	S.E. Public Ser.Auth	Jennifer Ladd	(804)420-4700	GSX	(800)251-1227	0.00		
Virginia	Arlington Cnty*	/88	County	Cynthia Hilton	(202)659-4813			0.00		
Virginia	Loudoun (2 wk)	04/09 /88	County	Rick Pedeschi	(703)777-0234	GSX	(800)838-4440	38000.00	11,872 lbs	169
Virginia	Fairfax Cnty,2day	05/07 /88	County Fire Dept	Melanie Pearson	(703)246-2331	Rollins Env	(302)479-2700	40000.00	10,000 lbs	200
Virginia	Alexandria	05/07 /88	Dept TES	Dick Croxford	(703)838-4488	GSX		0.00		
Virginia	Fairfax County	05/21 /88	County Fire Dept	Melanie Pearson	(703)246-2331	Rollins Env Service	(302)479-2700	98000.00	36,00 lbs	850
Virginia	Chesapeake	10/08 /88		Liz McCormack	(800)845-1019	GSX	(800)845-1019	0.00		
Virginia	Virginia Beach	10/08 /88	SE Public Serv. Auth		(804)420-4700	GSX	(800)845-1019	0.00		
Virginia	Prince William Cnty	10/15 /88	County	Lynne Fess	(703)335-7328	GSX	(800)845-1019	0.00		
Virginia	Smithfield	10/22 /88	SE Pub. Serv. Author		(804)420-4700	GSX	(800)845-1019	0.00		
Virginia	Frfax/Tdwtr/Chst	10/29 /88	Cnty Fire Dept	Sandra Morse	(804)225-2887	Rollins Env Service	(302)479-2700	0.00		
Virginia	Fairfax Cnty	11/05 /88	County Fire Dept	Melanie Pearson	(703)246-2331	Rollins Env Service	(302)479-2700	0.00		
Virginia	Alexandria	11/05 /88	County	Liz McCormack	(800)845-1019	GSX	(800)845-1019	0.00		
Virginia	4 counties (2 dy)	fall/ /88		Jennifer Ladd	(804)420-4700			0.00		
Virginia	Montgomery Cnty	fall/ /88	County			GSX	(800)838-4440	0.00		
Washington	Whatcom County*	/82	Cnty Health/Sol Wast	David Bader	(206)676-6724			0.00	paint	
Washington	Seattle/King Cnty#*	/82						0.00		
Washington	King Cnty*	4Spr /82	Chem Processors	Roger Nelson	(206)223-0500	Chem Processors	(206)223-0500	0.00		
Washington	King Cnty*	/83	Chem Processors			Chem Processors	(206)762-3362	0.00		
Washington	Whatcomb County*	/83						0.00		
Washington	Seattle/King Cnty*#	/83						0.00		
Washington	Tacoma/Pierce	4Spr /83	County Hlth Dept	Doug Pierce	(206)591-6571			0.00		
Washington	King Cnty*	/84	Chem Processors			Chem Processors	(206)762-3362	0.00		
Washington	Whatcomb County*	/84						0.00		
Washington	Seattle/King Cnty*#	/84						0.00		
Washington	King Cnty*	/85	Chem Processors			Chem Processors	(206)762-3362	0.00		
Washington	Whatcomb County*	/85						0.00		
Washington	Seattle/King Cnty*#	/85						0.00		
Washington	Bellevue	4Spr /85	City	Saran Grey	(206)453-4395	Chem Processors		0.00		*20
Washington	Kenoana	5/18 /85	EPA			GSX Services	(800)251-1227	11686.00	2530 lbs	
Washington	Spokane	6/01 /85	City	David Hernes	(509)456-2602	Chem-Safe		0.00		300
Washington	Kent	9/14 /85	City Fire Dept	Asst Chief Berg	(206)872-3360	Chem Processors		0.00	180 gals	56

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Washington	Thurston Cnty	10/05 /85	Cnty Hlth Dept	Sue Davis	(206)786-5461	Chem Processors		0.00	240 gals	37
Washington	King Cnty*	/86	Chem Processors			Chem Processors	(206)782-3362	0.00		
Washington	Whatcomb County*	/86						0.00		
Washington	Seattle/King Cnty*#	/88						0.00		
Washington	Kent	4Apr /88	City Fire Dept	Asst Chief Berg	(206)872-3380	Crosby & Overton		0.00	320 gals	116
Washington	Spokane	4Apr /88	City	David Hernes	(509)456-2802	Chem-Safe		18585.00	2800 gals	361
Washington	Thurston Cnty	5/03 /88	Cnty Hlth Dept	Sue Davis	(206)786-5461	Chem Processors		0.00	1210 gals	225
Washington	Bellevue	5/08 /88	City	Sarah Grey	(206)453-4895	Chem Processors		17000.00	950 gals	130
Washington	Snohomish Cnty	5/17 /88	Health Dist	Jeff Defenbach	(206)259-0883	Chem Processors		0.00	935 gals	89
Washington	Kenosha	5/18 /88	Public Hlth Dept			GSX Services	(800)251-1227	11888.00	2530 gals	
Washington	Vancouver	6/21 /88	WA Hlth Dept	Gary Bickett	(206)696-8215	Chem Processors		0.00	220 gals	39
Washington	Jefferson Cnty	8/18 /88	Public Works	Carter Breskin	(206)385-3505	Chem Processors		0.00		
Washington	Yakima Cnty	11/01 /88		Mark Nedrow	(509)585-4128	Chem-Safe		0.00		
Washington	Thurston Cnty*	/87	Public Works	Rick Pierce	(206)786-5592			0.00	flammables /pest	
Washington	Seattle[King Cnty]*	/87	Chem Processors			Chem Processors	(206)782-3362	0.00		
Washington	Whatcomb County*	/87						0.00		
Washington	SEattle/King Cnty*#	/87						0.00		
Washington	Spokane	5/30 /87	City/Sld Wste Mgt	Dennis Hine	(509)456-2208	Chem Safe Srvcs		0.00	41 drums	325
Washington	Bellevue/Kent	5/30 /87				Chem. Processors		0.00		
Washington	Seattle/King County	5/30 /87	Metrocenter YMCA	Richard Conlin	(206)382-5013			0.00	118 tons	4000
Washington	Island Cnty	6/13 /87		Larry Kwarsick	(206)679-7331			0.00		
Washington	Yakima Cnty	6/13 /87	Yakima Pub Works	Mark Nedrow	(509)575-6386	Chem Safe Srvcs		0.00	13 drums	80
Washington	Yakima Cnty	6/27 /87	Yakima Pub Works	Mark Nedrow	(509)575-6386	Chem Safe Srvcs		0.00	24 drums	105
Washington	Island Cnty	9/19 /87		Larry Kwarsick	(206)679-7331			0.00		
Washington	Tacoma/Pierce	9/24 /87	City/County	Dave Frutiger	(206)591-5544	Chem Safe Srvcs		0.00	100 drums	525
Washington	Whatcom Cnty*	/88	Health Dist	Dave Bader	(206)676-6724			0.00		
Washington	Thurston Cnty*	/88		Maria Zurofke	(206)786-5457			0.00		
Washington	King County*	/88	Chem Processors	Glen Dillman	(206)782-3362	Chem Processors	(206)782-3362	0.00		
Washington	King County*	/88	County Health Dept	Stephanie Whitman	(206)587-3292			0.00		
Washington	Yakima 3 wks x (3)	03/ /88	DPW	Mark Nedrow	(509)585-4128			0.00		
Washington	Thurston	06/21 /88	Cnty Health Dept	Maria Zurofke	(206)786-5457	Chem Processors	(206)223-0500	0.00		
Washington	King County, 2 day	08/03 /88	Metrocenter YMCA	Richard Conlin	(206)382-5013			0.00		
Washington	Spokane	08/04 /88	Health Dept	Rye Sterling	(509)456-6040	Chem-Safe Services	(509)988-3973	0.00		
Washington	Washugle*	09/ /88	McClary Columbia Co.	Bob Orr	(206)835-8743			0.00		
Washington	5 counties	09/24 /88	HoodCanal Coord Coun	Richard Conlin	(206)382-5013	4 contractors used		0.00		
Washington	King County	10/22 /88	Metrocenter YMCA	Richard Conlin	(206)382-5013			0.00		
Washington	Clark County*	Fall/ /88						0.00		
West Virginia	Nitro	04/01 /85	Monsanto	Keith Miller	(304)759-4400			0.00		
West Virginia	Kanawha County	06/06 /87	Haz. Waste Adv. Comm	Carol Herrick	(304)348-3381	CECOS	(513)681-5738	21000.00	825 gals	105
Wisconsin	Madison	06/12 /84	Dept of Public Hlth	Jill Schmidt	(608)266-4843	Triangle Resources		12000.00	3400 lbs	340
Wisconsin	Brown Cnty	10/01 /84	Cnty Emerg Gov't	Carol Hayden				0.00		
Wisconsin	City of Kenosha	5/18 /85		George Zimmer	(414)656-8170	GSX Services	(800)251-1227	0.00	405 gals	
Wisconsin	Madison	9/07 /85	Dept of Public Hlth	Jill Schmidt	(608)266-4843	GSX Services	(800)251-1227	15918.00	6695 lbs	550
Wisconsin	Marathon Cnty	9/14 /85	County	Tom Wilson				0.00		
Wisconsin	Manitowoc	05/18 /85	EPA	Jeff Byers		GSX Services	(800)251-1227	19505.00	2,620 lbs	
Wisconsin	Brown Cnty	10/12 /85	Cnty Emer Gov't			GSX Services	(800)251-1227	9433.00	1705 lbs	
Wisconsin	Outagamie Cnty	10/12 /85	Cnty Envir Comm	Dave Muench				0.00		
Wisconsin	Manitowoc	5/10 /86	Cnty Sld Waste Dept	Jeff Byers		GSX Services	(800)251-1227	19505.00	3685 gals	
Wisconsin	Portage Cnty	5/17 /86	Cnty Solid Waste	John Leatherman				0.00		
Wisconsin	City of Kenosha	5/17 /86	City of Kenosha			GSX Services	(800)251-1227	9000.00	987 gals, 31 lbs	

HOUSEHOLD HAZARDOUS WASTE
COLLECTION PROGRAMS 1981-1988

STATE	LOCATION	DATE	SPONSOR	CONTACT	PHONE #	HAULER	PHONE #	COST	WASTE	PARTIC
Wisconsin	Dane Cnty	9/06 /86	Cnty Emer Gov't	Kathy Unertl	(608)266-4500	GSX Services	(800)251-1227	0.00		
Wisconsin	Marathon Cnty	9/13 /86	Solid Waste					0.00		
Wisconsin	Eau Clair Cnty	9/20 /86	Solid Waste	Mel Erickson	(715)834-5055	GSX Services		0.00		
Wisconsin	Waukesha Cnty	05/10 /86	Cnty Solid Waste	Karen Fiedler	(414)548-7820	GSX Services	(800)251-1227	33743.00	8160 lbs	
Wisconsin	Wipendago Cnty	10/11 /86	Solid Waste					0.00		
Wisconsin	Outegamie Cnty	10/11 /88		Steven Golubic	(414)735-5148			0.00		
Wisconsin	La Crosse Cnty	5 /87		Mike Vien	(608)785-9572			0.00		
Wisconsin	City of Kenosha	5 /87		George Zimmer	(414)656-8170			1462.90	1,445gal, 6lbs solid	99
Wisconsin	Brown Cnty	5 /87	Brown Cnty	Mike Donert	(414)436-3327	Chem Waste Mgt	(312)396-1050	12000.00		
Wisconsin	City of Sheboygan	5/30 /87	City of Sheboygan	Robert Kuhlmann	(414)459-3366	E&K Haz Waste		40000.00		352
Wisconsin	Eau Claire Cnty	9/19 /87	Cnty of Eau Claire	Mel Erickson	(715)839-5044	GSX Services	(800)251-1227	0.00		
Wisconsin	Marathon Cnty	9/27 /87	Cnty of Marathon	Jim Pellitteri	(715)847-5000	GSX Services	(800)251-1227	0.00	114 drums	
Wisconsin	Ozgukee Cnty	04/ /87		Gary Kohler		Aquatech	(418)284-5746	0.00		
Wisconsin	City of Madison	10/03 /87	City of Madison	Jill Schmidt		Chem Waste Mgt	(312)396-1050	0.00		15
Wisconsin	Waukesha Cnty	10/24 /87	Cnty of Waukesha	Karen Fiedler	(414)548-7820			0.00		
Wisconsin	Outegamic Cnty	04/30 /88		Steve Golebic	(414)735-5148			0.00		
Wisconsin	Allegheny	04/30 /88	Cnty	Dave Munsch	(414)735-5119			0.00		
Wisconsin	Kenosha	05/20 /88	City	George Zimmer	(414)656-8170			0.00		
Wisconsin	Racine	06/18 /88	Health Dept	Robert Begley	(414)636-9493			0.00		
Wisconsin	Madison	09/ /88	Health Dept	Jill Schmidt	(608)266-4843			0.00		
Wisconsin	Madison	09/ /88		Dennis Sopcich	(414)288-4029			0.00		
Wisconsin	Sheboygan Cnty	10/02 /88	County	Liz McCormack	(800)845-1019	GSX	(800)845-1019	0.00		

APPENDIX VI

National Household Hazardous Waste Collection Program Survey

National Household Hazardous Waste Collection Program Survey
Basic Data Base Information-Part A

1. Location(s) and date(s) collection program was or will be held

____

2. Type of program: (please check all boxes that apply)	HHW only	HHW and SQGs
	Paint only	Oil only
	Pesticide only	*Permanent
	Single day	Multiple days
	Single site	Multiple site
	Other (please specify)__________	

____

*A permanent program is defined as one which is held at a fixed site with frequent, regular collection times(at least 1/month).

3. Sponsor:

Name of organization: ______________________

Address: ______________________

City: ____________ State: ______ Zip: ______

Contact Person: ______________________

Telephone: ______________________

4. Hazardous Waste Management Contractor:

Name: ______________________

Address: ______________________

City: ____________ State: ______ Zip: ______

Contact Person: ______________________

Telephone: ______________________

5. What was the total cost of the program? disposal ________; publicity/education ________; staffing ________; other operating expenses ________; total costs ____________.

6. What was the total amount of waste collected? (please specify what units were used to quantify the amount of waste collected (eg. 55 gal. drums, pounds, tons, gals, etc.) and whether it was packaged weight or raw weight)

____

____

7. Number of households ______ or carloads ________.

Return to: Dana Duxbury & Associates, Corporate Office Centers, 3rd Floor, 16 Haverhill Street, Andover, MA 01810, (508)470-3044.

PART B

National Household Hazardous Waste Collection Program Survey
Program Profile Information

1. What was or will be the site of the collection?

○ private parking lot
○ school yard
○ municipal landfill
○ government building
○ auto service center
○ curbside
○ government parking lot
○ private landfill
○ fire department
○ permanent collection site
○ other (please specify): ________

2. If the collection program was or will be co-sponsored, please list the co-sponsors on the back of this sheet.

3. Have you held household hazardous waste collection programs in the past?
○ Yes ○ No

4. If you answered yes to the previous question, when did you hold previous collections (please list dates and locations)?
____
____
(Use the back of this page if you need more room.)

5. If you hold collections regularly, what is the frequency?
____

6. Who sorted the collected materials?

A hazardous waste management contractor
Chemist(s) hired for the collection
Volunteers
Other (please specify): ________
____

7. Who packed the collected materials?

A hazardous waste management contractor
Chemist(s) hired for the collection
Volunteers
Other (please specify): ________
____

8. Was the collected material stored on-site for later transport or management?
transport: Yes No
management: Yes No
If yes, for how long was the material stored? ________

Source: Dana Duxbury & Associates

National Household Hazardous Waste Collection Program Survey
Program Profile Information

9. Expenses:

How did the contractor charge for the program? (please check which applies and give amounts)

A. Set Up Fee Cost ______________________

B.Waste Management Method

Cost and Quantity of Waste

Fees for:
Landfilling ______________________
Incineration ______________________
Recycling ______________________
Treating/detoxifying ______________________

C. Fixed Fee Cost ______________________

D. Sorting and/or packing Cost ______________________

C. Other Cost______________________
(please specify) ______________________
____

Education program	Amount__________
Publicity/advertising costs	Amount__________
Sponsor's staff time	Amount__________
Used oil collection/recycling	Amount__________
Other	Amount__________

(please specify) ______________________
____

10. What volunteer services were obtained?______________________
____

11. How many volunteers participated at the collection site?____

Grand Total Cost for the entire collection program______________

12. Sources of funding:

State Grant	Amount__________
Federal Grant	Amount__________
County Grant	Amount__________
Local Taxes	Amount__________
Monetary Donations	Amount__________
*"In Kind"/Non-monetary donations	Amount__________

(continued on next page)

National Household Hazardous Waste Collection Program Survey
Program Profile Information

(continued from previous page)

Corporate donations	Amount______________
Participant Fee	Amount______________
Tipping Fee	Amount______________
Other (please specify)	______________________________

*Please describe what kinds of "In Kind"/Non-monetary donations were received (use the back of this page as necessary).

13. Did your education program offer suggestions for safe substitutes?
    Yes No

14. Did you have a "swap" or waste exchange table for reusable materials?
    Yes No

15. Did you diseminate a participant survey? Yes No
If yes, please attach a copy and/or tabulated results.

16. Did you find any local uses for reusable materials?
    Yes No
    If yes, please specify which ones, how they were used and who took them?______________________________

17. Did you arrange for the direct recycling of any Materials? If so, specify what was recycled, if it was done on or off site, and who was the recycler (include address and phone number)

18. Education and Publicity program:
    Please describe your education and publicity program in terms of method, timing, frequency, and quantity (for example: newspaper ad. every three days for six months prior to collection). Include the size of the targeted population.

19. Please send scripts/copies of any radio ads, TV ads, newspaper articles, flyers, brochures, etc. with your completed survey. Please note if you developed any audio visuals, exhibits, etc.

National Household Hazardous Waste Collection Program Survey
Program Profile Information

20. Did you have any special problems with your collection program? ____________________

How were they handled? ____________________

21. Are there things that you would do differently; if so, why? ____________________

22. What things worked well for your collection and why? ____________________

23. Who accepted program liability? ____________________

24. Were volunteers covered under an insurance policy? How? ____________________

25. What factors may have affected the participation rate (eg. weather)? ____________________

PLEASE SEND IN PART A IMMEDIATELY. PLEASE SEND A COPY OF PART A WITH THE COMPLETED PART B SURVEY AS SOON AS YOU HAVE DETAILED PROGRAM INFORMATION.

Completed surveys should be mailed to: Dana Duxbury & Associates, Corporate Office Centers, 3rd Floor, 16 Haverhill Street, Andover, MA 01810, (508)470-3044.

National Household Hazardous Waste Collection Program Survey
Program Profile Information

Inventory of collected wastes:

Please use the following key of Waste Categories, Management methods, and Packaging to fill in the blank inventory chart.

Waste Categories:

1. Oil based paint
2. Latex paint
3. Wood stains
4. Wood preservatives
5. Paint thinners

6. Motor oil
7. Brake fluid
8. Transmission fluid
9. Antifreeze
10. Car wax
11. Automotive/boat batteries

12. Pesticides
13. Weed killers/herbicides
14. Chlorine Bleach
15. Photochemicals
16. Pool acids
17. Outdated Pharmacueticals
18. Cosmetics
19. Aeresol cans
20. Floor/furniture polishes
21. Drain openers
22. cleaners
23. adhesives
24. dry cell batteries

25. other (please specify)

Management Methods:

A. Waste exchange
B. Local reuse
C. Recycled
D. Fuel blending
F. Chemical treatment/detoxification
G. Solid incinerationcation
H. Solidification
I. Landfill
J. Other (please specify)

Packaging Methods:

P1. 5 gal pail
P2. 55 gal drum
P3. 65 gal overpack
P4. 85 gal overpack
P5. 1 gal pail
Q1. 5 gal pail (lab pack)
Q2. 55 gal drum (lab pack)
Q3. Other (please specify)

Please fill out the blank collected waste inventory according to the example on the next page.

National Household Hazardous Waste Collection Program Survey
Program Profile Information

SAMPLE WASTE INVENTORY CHART

Waste Category:	Management Method:	Packaging Method:	# of drums or pails:	Disposal Cost per drum or pail:	Total Disposal Cost:
2	C,E	N/A	100 lbs	$10/lb	$1000.00
6	D	P2	2	$15/drum	$30.00
6	C	P1	1	$5/pail	$5.00
12	B	Q2,P3	1	$30.00	$30.00
25 (Silvex)	J (not accepted)	N/A	N/A	N/A	N/A

Please follow this sample format when using the blank waste inventory form on the next page.

National Houshold Hazardous Waste Collection Program Survey

Program Profile Information

Total

Waste Category:	Management Method:	Packaging Method:	# of drums or pails:	Disposal Cost per drum or pail:	Disposal Cost:

APPENDIX VII

Bibliography on Household Hazardous Wastes

Bibliography

on Household Hazardous Wastes

October 20, 1988

Prepared by Dana Duxbury & Associates for the Center for Environmental Management, Tufts University

1. This bibliography is a compilation of a) the bibliography listed in Alternatives to Landfilling Household Hazardous Waste, a publication by Gina Purin, Golden Empire Health Planning Center, 2100 21st Street, Sacramento, CA 95818 b) a bibliography put together by the Center for Environmental Management for the Environmental Protection Agency on Household Hazardous Waste. Brochures and other studies collected by the Center for Environmental Management are also included.

2. The bibliography has been split into three parts I) General Materials II) State Reports and Brochures on Household Hazardous Waste III) Household Hazardous Waste Materials Bibliography by Fate.

Bibliography Contents

Page

I General Materials.............................. 4

A. General................................ 4
B Curriculum and Education................ 11
C. Articles in publications................ 14

II State Reports and Brochures on Household Hazardous Waste 15

III Household Hazardous Waste Materials Bibliography by Fate 26

I. GENERAL MATERIALS

A. GENERAL MATERIALS

Alternatives to Landfilling Household Toxics, by Golden Empire Health Planning Center, available from Local Government Commission, 909 12th St., Suite #203, Sacramento, CA 95814. This book focuses on alternatives to using landfills and discusses options employed by various programs across the country.

Assessment of Household Exposure to Common Consumer Products (1986) Donna Eisenhower, Ph.D., Joseph S. Carra, Mary Frankenberry, and Karen Hamerstrom, published by WESTAT, 1650 Research Boulevard., Rockville, MD 20850-3129, (301) 251-1500. This report is the first attempt to collect consumer information for exposure assessment through a telephone survey. "Engineering judgement" is compared to the empirical data gathered from these surveys.

Bug Busters: Getting Rid of Household Pests Without Dangerous Chemicals (1985) by Bernice Lifton, McGraw-Hill Book Company. The book describes safe, effective alternatives to chemical pesticides.

Bury It In The Back: Hazardous Waste Disposal of Used Automobile Oil is available from MASSPIRG Education Fund/Publications, 37 Temple Place, Boston, MA 02111, (617) 423-1796. Reports on the effects of improper disposal of waste oil. Focuses on the do-it-yourself oil changer and the retail outlets where the automotive oil is bought.

Chemical Hazards in the Home is available through Golden Empire Health Planning Center, P.O. Box 162997, Sacramento, CA 95816. A series of four informational brochures addressing pesticides, solvents, household cleaners and polishes, and safety equipment.

Clinical Toxicology of Commercial Products, Robert Gosselin et. al. Baltimore: Williams and Wilkins Company. Lists 3000 chemical ingredients widely used in commercial products; gives toxicity information on each. Also has a trade-name index for 17,000 products which identifies manufacturers, lists ingredients for each product, and specifies toxic components. This reference source should be found in a public library.

Common Sense Pest Control Quarterly is available through the Bio-Integral Resource Center, P.O. Box 7414, Berkeley, CA 94707. Designed to give readers access to the wide variety of safer alternatives available for managing insect, weed, rodent, and plant pests found in the home, on the human body, on pets, in the garden, the work place, and the community.

A Comprehensive Hazardous Waste Exclusion Program at a Municipal Solid Waste Landfill by William Merry, District Engineer at the

CA Monterey Regional Waste Management District. Discusses a comprehensive hazardous waste exclusion program which also includes a 5 day per week household hazardous waste collection component. Published in the Proceedings of the Governmental Refuse Collection and Disposal Association (GRCDA) 25th Annual International Seminar Equipment, Services and Systems Show. August 1987, St. Paul, MN. The report is available from GRCDA, P.O. Box 7219, Silver Spring, MD 20910, (301) 585-2898.

"Disposal - Do It Right" Household Products Disposal Council, 1625 Eye Street, NW, Suite 500, Washington, DC 20006, 202-659-5535. Information developed by the manufacturers of certain household hazardous waste products.

Does Your Business Produce Hazardous Waste? Many Small Businesses Do. (June 1985) US Environmental Protection Agency (EPA), Office of Solid Waste and Emergency Response, Washington, DC 20460. EPA 530-SW-010.

Encyclopedia of Chemical Trademarks and Synonyms by H. Bennett. Published by the Chemical Publishing Company, Inc., NY.

The Encyclopedia of Natural Insect and Disease Control (1985) is available from Rodale Books, 33 East Minor Street, Emmaus, PA 18049. Offers hundreds of ways to control insect pests naturally, without the use of harsh chemicals. Also includes color photos and drawings of troublesome insects, habits and behavior of natural creatures, methods of attracting pest-eating predators, ways to develop an integrated pest control strategy and more.

Evidence of Inappropriate Disposal of Hazardous Waste From Small Quantity Generators (1984), Solid waste technology memo No. 11 by L. Jackson Russell, N. Knappenberger. Available from Association of Bay Area Governments, P.O. Box 2050, Oakland, CA 94604, (415) 464-7900.

"A Guide to Household Hazardous Waste," Homeowner Series. The Chesapeake Bay Foundation, 412 N. 2nd Street, Harrisburg, PA 17101. (717) 234-5550.

Guide to Hazardous Products Around the Home compiled and written by Sondra Goodman, Morris Kent, and Marie Steinwachs. This guide is available from the Household Hazardous Waste Project, P.O. Box 87, 901 South National, Springfield, MO 65804, (417) 836-5777

Handbook of Industrial Toxicology, (1976) by E.R. Plunkett, M.D., Chemical Publishing Co., Inc., New York. For each chemical listed, gives synonyms, description of properties, common uses, toxicity, treatment, and safety measures.

Handbook of Toxic and Hazardous Chemicals and Carcinogens, second edition, (1985) by Marshall Sittig, Noyes Publications, Park Ridge, NJ. Presents concise chemical, health and safety information on nearly 800 toxic and hazardous chemicals which includes a description of the chemical, code number, DOT designation, synonyms, potential exposure, incompatibilities, permissible exposure limits in air, permissible concentrations in water, disposal methods, personal protective methods and more.

Hazardous Chemicals Data Book (1980) by G. Weiss. Published by Noyes Data, Park Ridge, NJ.

Hazardous Wastes from Homes is available from Enterprise for Education, 1320 A Santa Monica Mall, Santa Monica, CA 90401. An extremely colorful magazine that makes for easy reading. Topics covered include type of wastes considered hazardous and suggested disposal methods, reduction and recycling opportunities, and sources to contact for additional information.

Hazardous Waste - What You Should & Shouldn't Do. Water Pollution Control Federation, 601 Wythe Street, Alexandria, VA 22314-1994. Colorful pamphlet with household hazardous waste disposal chart.

Home Safe Home is available through the Western Washington Toxics Coalition, 4512 University Way NE, Seattle, WA 98105, (206) 632-1545. Offers a wealth of information on cleaning and hobby supplies, office supplies, and pesticides. Also includes a section of safety equipment that suggests the specific type of protective gear needed when exposed to a variety of toxic products found in household and hobby supplies.

"Home Safety," Business and Legal Reports, 64 Wall Street, Madison, CT 06443-1513. 1-800-553-4569

House Dangerous. (1987) Ellen J. Greenfield. Blue Cliff Editions, Inc. A paperback book on indoor pollution in your home and office and what you can do about it.

Household Hazards: A Guide to Detoxifying Your Home by the League of Women Voters of Albany County. (1988) Newsgraphic Printers, Delmar, NY. Order from League of Women Voters of Albany County, 119 Washington Avenue, Albany, NY 12207.

Household Hazardous Waste is available from Morgan Hill Office of Emergency Services, 18300 Old Monterey Road, Morgan Hill, CA 95037, (408) 779-7231. Lists common household toxic substances and alternatives. Also lists resources and references.

Household Hazardous Waste Collection Programs. (November 1987). Center of Environmental Management, Tufts University, 474 Boston

Avenue, Curtis Hall, Medford, MA 02155. Summary of EPA's National Household Hazardous Waste Collection Program conference and background material developed by CEM, (617) 381-3486. $11.00 includes postage and handling.

Household Hazardous Waste Management: A Survey of selected programs in North America and Europe by Jennie S. Goldberg, (January 1987), Water Quality Division, Municipality of Metropolitan Seattle, Exchange Building, 821 Second Avenue, Seattle, WA, 98104, (206) 684-1233.

Household Hazardous Waste: Solving the Disposal Dilemma (1984), by Gina Purin, et. al., Local Government Commission, 909 12th St., Suite 203, Sacramento, CA 95814. A comprehensive "how to" handbook that discusses the implementation of collection programs for residentially generated hazardous waste. Drawing on the collective experience of programs conducted nationally, the handbook discusses interest areas that include various program design options, generator responsibilities, permits/variances, manifesting and transporting the waste, liability, financing a program and publicity efforts. An extensive resource section is included in the appendices.

Household Hazardous Waste Disposal Project Summary by David Galvin and Susan Ridgley is available from METRO, Municipality of Metropolitan Seattle, Exchange Building, 821 Second Avenue, Seattle, WA 98104, (206) 684-1216. Provides a comprehensive overview of the household hazardous waste issue; reviews the legal framework which controls the contents, labeling and disposal of household toxics; and examines four classes of consumer products for their contents, health effects, and environmental fate. The categories are pesticides, paint products, household cleaners, and automotive products.

Household Hazardous Waste Wheel is available from Environmental Hazardous Management Institute, P.O. Box 283, 137 High Street, Portsmouth, NH 03801, (603) 436-3950. A spin of the wheel tells you the types of hazardous waste found in the home, the probable hazardous chemical constituents of these wastes, associated hazards, non-toxic alternatives, preferred disposal options, and more.

The Implications of Behavioral Aspects on the Production and Discard of Household Hazardous Wastes (1985) by Douglas C. Wilson. Published as a thesis, M.A., University of Arizona, University Microfilms, Ann Arbor, MI.

"Info Letter - Hazardous Household Products," (1987) Environmental and Occupational Health Information Program, UMDNJ Robert Wood Johnson Medical School, 675 Hoes Lane, Piscataway, NJ 08854-5635. (201) 463-4500.

Information on Disposal Practices of Generators of Small Quantities of Hazardous Waste is available from the U.S. General Accounting Office, Document Handling and Information Services Facility, P.O. Box 6015, Gaithersburg, MD 20760, (202) 275-6241. Provides information on Federal and State efforts to control disposal practices of small quantity generators. Also discusses the extent to which occupational safety and health and groundwater contamination problems are caused by the disposal of hazardous waste by small quantity generators.

"Know Your Chemicals - Alternatives & Precautions," Massachusetts Dept. of Enviornmental Management, 100 Cambridge St., Boston, MA 02202. (617) 727-3260.

Making the Switch: Alternatives to Using Toxic Chemicals in the Home (1986) by Golden Empire Health Planning Center is available from Local Government Commission, 909 12th St., Suite 203, Sacramento, CA 95814. This 40-page consumer guide discusses methods for reducing exposure to some toxics in the home environment, identifies products that contain toxic chemicals, and addresses problems associated with inadequate labeling and indiscriminate disposal practices. Offers many safer alternatives to using household products that contain toxic substances.

The Merck Index: An Encyclopedia of Chemicals and Drugs (1968), by P.G. Stecher et. al., Merck and Company, Inc. Rahway, NJ. Describes toxic effects and common uses of 10,000 chemicals. Has a poison-control center list, first-aid information, and a cross-index of chemical names and formulas.

The Natural Formula Book for Home and Yard edited by Dan Wallace is available from Rodale Press, 33 East Minor Street, Emmaus, PA 18049, (215) 967-5171. Contains over 400 natural formulas to help you live healthier, safer, and more economical. Also includes recipes for all natural convenience foods. Formulas given for all purpose cleaners, laundry needs, natural hygiene and beauty products, garden products, and a number of other areas.

Non-toxic and Natural: How to Avoid Dangerous Everyday Products and Buy or Make Safe Ones by Debra Lynn Dadd is available from Non-toxic Lifestyles, Inc., Box 390, Inverness, CA 94937, (415) 663-1685. In this heavily researched and up-to-date book, author Debra Lynn Dadd rates thousands of items in such categories as food, beauty aids, offices supplies, building materials, household items, and clothing. She tells what is in them, how they can harm us, and how to replace them with store bought, mail order, or homemade products that are as effective but safe. Non-toxic Lifestyles also offers a subscription newsletter. Debra L. Dadd's newest publication is called The Non-toxic Home: Protecting Yourself and Your Family from Everyday Toxics and

Health Hazards.

Pesticides and You and Pesticide Safety: Myths and Facts are available from the National Coalition Against the Misuse of Pesticides (NCAMP), 530 Seventh Street SE, Washington, DC 20003, (202) 543-5450. Pesticides and You is a newsletter addressing the use and misuse of pesticides and provides valuable information to anyone interested in various aspects of economic poisons. Pesticide Safety: Myths and Facts dispels myths of safety behind the registration of pesticides. NCAMP also provides a number of alternatives for commonly used pesticides.

Pesticides in Lawn Contract Maintenance and Healthy Lawns Without Toxic Chemicals are available from the Rachel Carson Council, 8940 Jones Mill Road, Chevy Chase, MD 20815, (301) 652-1877. The books respectively outline the most commonly used pesticides in lawn maintenance, identify their health and environmental effects; and provide an ecological approach to control of turf disease.

Philip T. Gidley: Exercises in Hazardous Waste Problem Solving (1984) by Paul D. Bush, published in the Dangerous Properties of Industrial Materials Report, Hop Brook Farm, New Salem, MA 01355.

Review of Curbside Used Oil Recycling Programs in the United States by Versar Inc., 6850 Versar Center, Springfield, VA 22151. Discusses various curbside used oil recycling programs around the country and gives a costs and benefits analysis of such programs.

Toward a Comprehensive Program For Management of Household Hazardous Waste in Massachusetts. (1985) Environmental Institute, University of Massachusetts, Amherst, MA 01003, (413) 545-2842. 296-page book $8.00. Also available for $1.25 is an Annotated Bibliography.

Toxicants in Consumer Products. (1982) Report B of the Household Hazardous Waste Disposal Project, Metro Toxicant Program #1, by Susan M. Ridgley, Water Quality Div., Municipality of Metropolitan Seattle, 821 Second Ave., Seattle 98104. Reviews four general product classes - pesticides, paint products, household cleaners and automotive products - with technical data on the specific chemicals most often found in these products, and problems in the use and disposal of these products. 229 pp.

Why Your House May Endanger Your Health (1980) by Alfred V. Zamm, M.D. with Robert Cannon. Available in bookstores. This book brings about an awareness of household items contributing to toxic reactions. The first part shows what the average home is like and the myriad of substances to which we are exposed to indoors. The second part discusses what to do about it and the third part is designed for the person who is moving to a new home, building a new home, or renovating one.

B. CURRICULUM AND EDUCATION

Art Hazards Newsletter is available from the Center for Occupational Hazards, Inc., 5 Beekman Street, New York, NY 10038, (212) 227-6220. Provides information on hazards relating to various arts and crafts such as painting, theater, photography, silk screen, stain glass, ceramics, etc.

Artist Beware (1979), by Michael McCann, Watson-Guptill Publications, New York. An excellent handbook for artists, craftsmen, and home hobbyists. Explains the health risks associated with numerous chemical products. Discusses safety procedures, first aid, and recognition of poisoning. Individual chapters on painting, printmaking, ceramics, glass-blowing, enameling, sculpture, metalworking, photography, crafts, and children's art.

Chemical Education for Public Understanding Project (CEPUP) A series of activity-oriented science modules for use in junior high/middle school science. Three models currently being piloted: Threshold Limits, Chemical Survey, and Risk Comparison; additional modules are in preparation. Contact:

Dr. Herbert D. Thier
Lawrence Hall of Science
University of California at Berkeley
Berkeley, California 94720
(415) 642-8718

Cockroach Clean-up Tour (1983) by Kathleen Letcher Cowles, produced by the John Muir Institute, 20 W. High Street (WO), Morganstown, WV 26505, (304) 296-2855. An elementary school teaching packet that includes lesson plans, posters, a take-home booklet, a filmstrip/cassette tape, and adequate background materials to make any teacher an expert on environmentally sound pest control.

ERIC Clearinghouse for Science, Mathematics, and Environmental Education
Teaching about Hazardous and Toxic Materials, selected by John F. Designer and Marylin Lisowski. A compilation of activities and lesson plans from various sources in the ERIC database, given a consistent format and divided into K-3, 4-6, 7-9, and 10-12 grades. Includes a bibliography. $12.50.

ERIC/SMEAC
The Ohio State University
1200 Chambers Road, 3rd Floor
Columbus, Ohio 43212

Federation of Ontario Naturalists
A resource kit called Hazardous Waste, "designed for grades 12 to 13, but is easily adaptable for grades 7 to 9." This takes the form of box full of a diverse assortment of resource materials, such as pamphlets from various sources. It also includes lesson plans. $45 plus $5 postage and handling. Contact:

The Federation of Ontario Naturalists
355 Lesmill Road
Don Mills, Ontario
Canada, M3B 2W8

Household Hazardous Waste Educational Program Kit, (1988) compiled by Terri Smith, Health Education Specialist, San Bernardino County, EPWA, 385 No. Arrowhead Ave., San Bernardino, CA 92415-0160 (714) 387-4646. For grades K-6. Kit includes handbook, video for students, poster, teacher's guide, worksheets, student souvenirs.

Industrial States Policy Center, (1987) Teachers guide with 35 activities, divided into six units: Introduction; Hazardous materials in the home; Hazardous materials in the school; Hazardous materials in the community; Community action projects; Skill building (group process skills). $15.00. For more information, contact:

Industrial States Policy Center
691 North High Street
Columbus, OH 43215
(614) 224-4111

Living With Insects in the Big City (1987) by Diane Bush and Steve Dreistadt for Citizens for a Better Environment, 942 Market Street, Suite 505, San Francisco, CA 94102, (415) 841-6163. This curriculum will introduce students and teachers to the basic concepts of integrated pest management and is intended for students in kindergarten through 3rd grades. Although the teaching units have been developed to follow a sequence of concepts dealing with non-toxic pest control, they can also be used separately as parts of any environmental or natural science curriculum. A slide show is also available to accompany the curriculum.

Making the Connection. A Teacher's Guide to Household Hazardous Substances and the Classroom. A 13 1/2-minute video about incorporating household toxics curriculum in middle and high school health and science classes. The Ecology Center of Ann Arbor, 417 Detroit Street, Ann Arbor, MI 48104

Not A Pretty Picture: Art Hazards in California Public Schools (1984) by Ron Pembleton. Published by CALPIRG, 46 Shattuck Square, #11, Berkeley, CA 94704, (415) 642-9952. This book discusses health hazards in the arts and makes recommendations for safer practices.

Poison Palettes: A Study of Toxic Art Supplies in Massachusetts Schools is available from MASSPIRG Education Fund/Publications, 37 Temple Place, Boston, MA 02111, (617) 423-1796. Lists some potentially hazardous products and also offers recommendations on a number of issues that include product labeling, banning dangerous items from schools and teacher training.

School Science Laboratories: A Guide To Some Hazardous Substances, is available from Ken Giles, U.S. Consumer Product Safety Commission, 5401 Westbard Avenue, Bethesda, MD 20207, (301) 492-6580. Supplements the National Institute on Occupational Safety and Health's (NIOSH) Manual of Safety and Health Hazards in the School Science Laboratory. Identifies certain potentially hazardous substances in use in many school laboratories and provides a concise inventory to enable science instructors to take the initiative in providing for proper storage, handling, use and removal of extremely hazardous materials. Provides lists of explosives, carcinogens, highly toxic, and/or corrosive or irritant chemicals.

SLEUTH: Educational Activities on the Disposal of Household Hazardous Waste. (1982) Curriculum is available from Toxicant/HHW Project METRO (MS/81), 821 Second Avenue, Seattle, WA 98104. 206-684-1233.

Wastey Needs You: A Guide to the Use, Storage, and Disposal of Products that Become Household Hazardous Wastes. Grades 4-5, free. Household Chemical Awareness Coalition, 405 Agricultural Hall, Michigan State University, East Lansing, MI 48824.

C. ARTICLES IN PUBLICATIONS

"Clean It Up!" by Judith Robinson Snider. *Environmental Action*, pp 22-23, Nov/Dec, 1986.

"Collecting Household Toxics: Is It Worth the Effort?" by Ann Mattheis. *Waste Age*, pp 76-90, Feb. 1987.

"Don't Just Dump It Down the Drain," by Carrie Smith. *Family Safety & Health*, pp 26-30, Spring 1988.

"Home Is Where the Hazards Are," by Dana Duxbury. *RE:SOURCES*, Vol. 7, No. 2, pp 14-15.

"Household Hazardous Waste: When a Little Bit Means a Lot." *Health & Environment Digest.* Vol. 2, No. 8, Sept. 1988. Published by the Freshwater Foundation.

"Household Toxics Programs Are Here to Stay," by Ann Mattheis. *Waste Age*, pp 99-104, April 1988.

"How Hazardous are Municipal Wastes?" *American City and County*, pg. 41, March 1983.

"Is Your House a Toxic Dump." *Ranger Rick*, pp 41-42, April 1988. Published by the National Wildlife Federation.

"Managing Household Hazardous Wastes," by Marcia Williams and Dana Duxbury. *EPA Journal*, Vol. 13, No. 3, April 1987.

"The Method to Our Madness," by W.W. Hughes. *American Behavioral Scientist* 28(1): 41-49. 1984

"Mother's Guide to Hazardous Household Substances." *The Mother Earth News*, pp 1-10, May/June, 1984.

"Poisons In Your Home: A Disposal Dilemma." *National Audubon*, pp 12-16, May 1987.

"Toxic Household Trash," by Don Best. *Practical Homeowner*, Vol. 11, No. 8, pp 24-29, October 1987.

"Toxics on the Home Front," by David Galvin and Sally Toteff. *Sierra*, pp 44-48, Sept/Oct 1986.

II. STATE REPORTS AND BROCHURES

ALASKA

A Manual for the Household Hazardous Materials Audit (August 1987) by Kristine Benson. Available from Alaska Center for the Environment, 700 H Street, Anchorage, Alaska 99501. (907) 274-3621. $2.00. Easy-to-read, 26-page booklet contains guidelines to inventory and manage materials in the home.

CALIFORNIA

Household Hazardous Waste Sample Public Service Announcements. Environmental Health Services, County of San Bernardino, EPWA, 385 No. Arrowhead Ave., San Bernardino, CA 92415-0160. (714) 387-4646. A cassette tape of nine 30-second PSA's combining creativity and humor in providing sound public information.

A Report to the California State Legislature on Household Hazardous Waste by the California Waste Management Board. (January 1988) Preliminary version. CWMB, 1020 9th Street, Suite 300, Sacramento, CA 95814

City of Santa Monica 1986 Toxics Round-Up Day Report (June 1986) by the Santa Monica Department of General Services Water/Wastewater Division. This report discusses the planning, implementation, and results of Santa Monica's 1986 household and small business hazardous waste collection. The report is available from Water/Wastewater Division, Department of General Services, 1685 Main Street, Santa Monica, CA 90406-3295, (213) 458-8224.

Household Hazardous Waste: Your Guide to Safe and Proper Hazardous Waste Disposal. Brochure prepared by The Department of Environmental Health Services, County of San Bernardino, CA.

The World Is Full of Toxic Waste. Your Home Shouldn't Be. Environmental Health Coalition, Household Toxics Disposal Project, P.O. Box 8426, San Diego, CA 92101. (619) 235-0281. Flyer on toxic products in the home, their effects and proper disposal. Also, the Final Report of the 1984 project that included a survey, an educational program, and free disposal services in eight areas within the County of San Diego and the City of San Diego. Free.

The Disposal of Hazardous Waste by Small Quantity Generators: Magnitude of the Problem (June 1985) is available from the Association of Bay Area Governments, Metro Center, Eighth and Oak

Streets, Oakland, CA 94604. Examines the nature and magnitude of improper disposal of hazardous waste from households in selected San Francisco Bay Area Communities and from small businesses in selected standard industrial classification categories in the San Francisco Bay Area. Also presents alternative means of disposal.

Hazardous Waste in the San Francisco Bay Area: Status Report (1983) by The Association of Bay Area Governments. Solid Waste Technical Memorandum No. 10 by G. Silvermen is available from ABAG, P.O. Box 2050, Oakland, CA 94604, (415) 464-7900.

Alameda County Pilot Collection Program for Household and Small Generators of Hazardous Waste (April 1987) by Emy Chan Meiorin, published by the Asociation of Bay Area Governments, P.O. Box 2050, Oakland, CA 94604-2050, (415) 464-7941. This publication discusses collection programs held in the San Francisco Bay Area through from their start-up in 1983. Tables compare collection program financing, participation rates, waste generation rates, etc.

Ventura County Household Hazardous Waste Collection Program (November 1986) A guidance manual prepared for the Ventura Regional Sanitation District by the Community Environmental Council, Inc. 930 Miramonte Drive, Santa Barbara, California 93109, (805) 963-0583.

Work Plan for a Toxic/Hazardous Waste Management Plan for Small Quantity Generators: North Hollywood Pilot Study is available from the Southern California Association of Governments, 600 South Commonwealth Avenue, Suite 1000, Los Angeles, CA 90005, (213) 385-1000.

COLORADO

Larimer County Hazardous Waste Study: Executive Summary (February 1988) Prepared by the Larimer County Hazardous Waste Committee. Discusses the amount of wastes generated by private county citizens and small businesses. Based on the data, a proposal is put forth and discussed regarding education programs, hazardous waste management programs, and inspection/technical assistance programs for small businesses. Available from the Colorado Department of Health, 4210 East 11th Avenue, Denver, CO 80220, (303) 331-4855.

CONNECTICUT

Hazardous Products in the Home. Department of Environmental Protection, State Office Building, Hartford, CT 06106. Flyer on product use and disposal and chart of common hazardous products, their potential hazard and disposal methods.

Household Hazardous Waste in Connecticut - Report to the General Assembly. Report will be available for public distribution by December 1987. Contact Leslie Lewis, Citizen Information Unit, Department of Environmental Policy, 165 Capitol Avenue, State Office Building, Hartford, CT 06106, (203) 566-3489.

How to Organize a Community Collection Day. Department of Environmental Protection (see above). 30-page booklet originally prepared by the Pioneer Valley Planning Commission of Springfield, MA, and the Western Massachusetts Coalition of Safe Waste Management. (1985). Leslie Lewis, (203) 566-3489.

FLORIDA

Amnesty Days Information Packet. Department of Environmental Regulation, Bureau of Operations, 2600 Blair Stone Road, Tallahassee, FL 32301, (904) 488-0190. Information kit on the 1984 state-sponsored collection. Brochures, news releases, press clippings, plan, and summary report. Free.

IDAHO

Hazardous Waste in This House? Brochure prepared by League of Women Voters, Moscow, ID.

KANSAS

Final Report: Kansas Household Hazardous Waste Collection Days Project. (February 1987). Prepared by Kansas Department of Health and Environment. Forbes Field, Topeka, KS 66620-7200, (913) 862-9360.

MAINE

The World is Full of Toxic Waste. Your home shouldn't be. Brochure prepared by Natural Resources Council of Maine.

MARYLAND

Feasibility Study of Special Collection of Household Hazardous Waste: (January 1986). Prepared by the Maryland Environmental Service, 2020 Industrial Drive, Annapolis, MD.

MASSACHUSETTS

A Guide to the Safe Use and Disposal of Hazardous Household Products. Metropolitan Area Planning Council, 110 Tremont Street, Boston, MA 02108, (617) 451-2770. (1982) 50-page handbook on common household products with tips on a collection project and a bibliography.

Household Hazardous Wastes Collection Project: A How-to-Kit. (1981). Natural Resources Committee, League of Women Voters of Lexington, Massachusetts, Box 233, Lexington, MA 02173.

How Many of Our Common Household Products Are Hazardous? Metropolitan Area Planning Council, 110 Tremont Street, Boston, MA 02108, (617) 451-2770. Four-page flyer, well illustrated. How to get rid of products. Substitutes for common products. Free.

"Results of a Regional Household Hazardous Waste Collection Program in Barnstable County, Massachusetts." David S. Blackmar, Scott W. Horsely, Lorraine Segall, Alan Woolf, Hazardous Waste, Vol. 1, No. 1. pp 111-122 (1984) Detailed description and critique of the 1983 collection on Cape Cod.

Household Hazardous Waste (1984), by Curtis and Anderson for Pioneer Valley Planning Commission and Western Massachusetts Coalition for Safe Management, Bureau of Solid Waste Disposal.

Beginning At Home: Tackling Household Hazardous Waste is an 18-minute video available from the Massachusetts League of Women Voters, 8 Winter Street, Boston, MA 02108, (617) 357-8380. Beginning with street interviews concerning the proper disposal of household toxics, the program progresses to wastes being dumped and the establishment of household collection programs as a safer disposal alternative. Wise buying of products is highlighted.

Household Hazardous Waste Information Kit. (1986) League of Women Voters of Massachusetts, 8 Winter Street, Boston, MA 02108, (617) 357-8380. A comprehensive kit on how to run a household hazardous waste collection. For sale. $15.00.

Household Hazardous Wastes: Everyone's Problem. League of Women Voters of Massachusetts, 8 Winter Street, Boston, MA 02108, (617) 357-8380. 18-minute slide-tape show. Available for rental or sale.

Household Hazardous Waste: Final Report on Matching Grants Program: Operation Clean Sweep. Report available by December, 1987 contact Barbara Kelley (617) 727-3260, Massachusetts Department of Safe Waste Management, 100 Cambridge Street, 9th Floor, Boston, MA 02202.

Pilot Program for Regional Collection of Harmful Household Chemicals. (July 1988) Revised Draft. Prepared by Kate Gage, et.al., Martha's Vineyard Refuse Disposal and Resource Recovery District, P.O. Box 2248, Oak Bluffs, MA 02557. A 6-month pilot program for regional collection at a permanent facility.

MICHIGAN

Household Hazardous Waste Series. (Summer 1988) Home Chemical Awareness Coalition, 404 Ag Hall, Michigan State University, East Lansing, MI 48824. (517) 355-9578. A series of informational brochures each discussing use and disposal of a household chemical product.

Household Hazardous Wastes: Disposal Recommendations. (1984, reprinted January 1987) Michigan State University Cooperative Extension Service. Extension Bulletin E-1782. 25 cents. 13-page brochure. Guidelines on buying, storing, and use. Special sections on pesticides, paints, and automotive products.

Michigan Household Hazardous Substance Handbook. Published by the Ecology Center of Ann Arbor, 417 Detroit Street, Ann Arbor, MI 48104, (313) 761-3186. The handbook is designed to serve as a resource for people frequently contacted by the public for information on household hazardous substances and wastes.

MINNESOTA

Implementation Plan for a Household Hazardous Waste Collection Program in Ramsey and Washington Counties. (April, 1988) by Pope-Reid Associates, Inc., 245 E. 6th Street, Suite 813, St. Paul, MN 55101.

Interim Report #1, The Legislative Commission on Minnesota Resources, Household Hazardous Waste Collection Project. (1985). Susan Ridgley/Steve Lee. Hazardous Waste Disclosure Unit, Hazardous Waste Section, Solid and Hazardous Waste Division, Minnesota Pollution Control Agency, 520 Lafayette Road, St. Paul, MN 55155, (612) 297-1453. Summary of the six collection projects held in Minnesota.

Hazardous Waste from Minnesota Households: The Final Report of the Household Hazardous Waste Pilot Collection Project (1987) by Susan Ridgley, available from: MPCA, Division of Solid and Hazardous Waste, 520 Lafayette Road, St. Paul, MN 55155, (612) 297-1453. This extensive report discusses various methods of collection projects and management opinions available for household hazardous waste. Analyzes public opinion surveys conducted by telephone and at collection sites. Presents data on waste collected at various programs and gives demographics of participants. Also included in the report are collection projects participation rates, a waste frequency analysis, total wastes collected by product type and much more. Report concludes with recommendations for future action and legislation activity.

Final Report: Evaluation of Municipal Solid Waste Incineration St. Paul, MN: Minnesota Pollution Control Agency.

Feasibility Study on Long-Term Management Options for Used Oil in Minnesota-Draft Final. Crystal, MN: Waste Management Board, Natural Resources Research Institute, University of Minnesota. (1987).

Household Hazardous Waste Telephone Advice Guidance Manual. compiled by MPCA for use by trained persons giving advice in Minnesota. Important as a model when adapting to individual state practices. For information, call Ned T. Brooks, Special Waste Unit, Hazardous Waste Division, MPCA, 520 Lafayette Rd, St. Paul, MN 55155, (612) 296-7352.

MISSOURI

Household Hazardous Waste Survey, Greene County, Missouri, Part I and Household Hazardous Waste Survey, Greene County, Missouri, Part II: Comparison of Two Surveys. (July, 1988) Ravindra G. Amonker and Wm. Cheek, HHWP, Center for Resource Planning & Management, Southwest Missouri State University, Springfield, MO 65804-0089

NEW HAMPSHIRE

The Exeter Plan (1980) is available from Gidley Laboratories, Inc., Chemical and Environmental Sciences, Fairhaven, MA. A hazardous waste management plan created for the town of Exeter, New Hampshire.

Hazardous Material In Your Home - Brochure by the University of New Hampshire, Cooperative Extension Service and the New Hampshire Department of Environmental Services.

NEW JERSEY

Research Report: New Jersey Pesticide Disposal Project. A report about Local Pesticide Collection System (1985-86). Report is useful as "how-to" for local collection of pesticides by government agencies and industry. Bureau of Pesticide Control, Div. of Environmental Quality, New Jersey Dept. of Environmental Protection.

The Clean Water Book. A Guide to Reducing Water Pollution in Your Home and Neighborhood. (1988) Adapted for New Jersey from the Baybook (Chesapeaker Bay). Includes discussion of lawn chemicals, pesticides, and disposition of household toxics. New Jersey Dept. of Environmental Protection, Div. of Water Resources.

New Jersey Household Hazardous Waste Study. (June 1988) Compiled for New Jersey Hazardous Waste Facilities Siting Commission, CN 406, Trenton, NJ 08625 by Science Applications International Corporation, 1 Sears Dr., Paramus NJ 07652.

Consumer Goods Hazardous Waste Study. (April 1988) Compiled for New Jersey Hazardous Waste Facilities Siting Commission by Science Applications International Corporation, 1 Sears Dr., Paramus, NJ 07652.

NEW MEXICO

Albuquerque Hazardous Waste Collection Project. Albuquerque Environmental Health Dept, Environmental Services Division, P.O. Box 1293, 924 Park Ave. SW, Albuquerque, NM 97103, (505) 766-7434.

NEW YORK

Household Hazardous Waste In New York : A Conceptual Framework for Policy Development: Submitted to New York State Environmental Facilities Corporation, by William T. Brina, Jr., July, 1987. (In household paper. Not available for public distribution)

STOP Program (Stop Throwing Out Pollutants), A "How To" Manual for Sponsors of Hazardous Household Chemical Collections. Nassau-Suffolk Region. New York State Dept. of Environmental Conservation, Div. of Solid and Hazardous Waste, 50 Wolf Rd., Albany, NY 12233-4010.

Town of Southold Household Waste Collection Center Operations Manual. Town of Southold, Town Hall, 53095 Main Street, P.O. Box 1179, Southold, NY 11971.

NORTH CAROLINA

Household Hazardous Waste: Collection and Disposal Options for North Carolina Communities (1987). Outlines procedures on how to organize a collection program. Contact Mary Beth Edelman, Institute for Environmental Studies, 311 Pittsboro Street - 256H, University of North Carolina, Chapel Hill, NC 27514, (919) 966-3332.

OHIO

Who, Me? Hazardous Waste in My Home? Brochure prepared by League of Women Voters of Toledo-Lucas County, 2827 Letchworth Parkway, Toledo, Ohio 43606

OREGON

Small Quantity Collection and Storage Facilities in Oregon for Hazardous Waste (1982) is available from the Resource Technology Corporation, 20480 Pacifica Drive, Suite G, Cupertino, CA 95014. Private citizens and small businesses in Oregon do not have a system available to conveniently and economically dispose of their hazardous waste in an environmentally sound manner. This report provides a basic design for a small quantity collection/storage facility to accommodate this need.

PENNSYLVANIA

York County Household Hazardous Collection Days. York County Solid Waste and Refuse Authority, York, PA. A project of the York County Solid Waste and Refuse Authority, League of Women Voters of Greater York, and Concerned Citizens. Summary of the collection days held in October 1985 in York, Pennsylvania. $10.00.

Synopsis of Hatfield Township, Household Hazardous Waste Day. (June, 1988) Sponsored and reported by Waste Conversion, Inc., 2869 Sandstone Dr., Hatfield, PA 19440. (215) 822-8996.

Household Hazardous Waste First Aid Kit compiled by the Garden Club Federation of Pennsylvania. Contains information about products, alternatives, collection, household audit. $3.75 and SASE to 103 Woodstone Lane #41, New Kensington, PA 15068. (412) 337-8008.

Household Hazardous Waste Collection Programs by the Clean Air Council, 311 S. Juniper St., Philadelphia, PA 19107 (215) 545-1832. A 26-page booklet, printed on 100% recycled paper, contains information about the design and implementation of a collection program.

Household Hazardous Waste Safety compiled by the Clean Air Council, 311 S. Juniper St., Philadelphia, PA 19107. (215) 545-1832. A 25-page educational booklet, printed on 100% recycled paper, describes handling of household products and suggests alternatives. RHODE ISLAND

RHODE ISLAND

How to Handle Household Hazardous Products: Brochure prepared by Rhode Island Department of Environmental Management.

TENNESSEE

An Indoor Air Quality Study of 40 East Tennessee Homes (1985) by A.R. Hawthorne, R.B. Gammage, and C.S. Dudney, Health and Safety Research Division, Oak Ridge, TN. Over a one-year period, measurements of indoor air pollutants (combustion gases, formaldehyde, volatile organics, particulate matter, and radon) were made in 40 homes in east Tennessee.

VERMONT

"The Domestic Side of Hazardous Wastes," Winter, 1985 issue, Air & Land - a quarterly report published by Vermont Agency of Environmental Conservation, Montpelier, VT 05602, (802) 828-3395.

VIRGINIA

Household Hazardous Waste in Virginia. (January 1986). A Guide for Local Governments. Virginia Polytechnic Institute and State University, Hazardous Waste Management Project, College of Architecture and Urban Studies, Blacksburg, VA 24061, (703) 961-7508. Updated version to this guide will be available by February 1988.

WASHINGTON

Seattle-King County Household Hazardous Waste Management Evaluation Project - Final Report, (June 1988) by Morley & Associates with America-North, Inc. for Seattle Solid Waste Utility, Suite 750, Dexter Horton Bldg, Seattle, WA 98104.

Local Hazardous Waste Management Plan for Seattle-King County (June 1988) Issue Paper Summary (28 pp). Issue Paper provides background for development of local plans to manage non-regulated small quantities of hazardous waste.

What You Should Know About Household Hazardous Wastes, brochure produced by Bellingham Public Works Department with assistance from Thermal Reduction Company, Inc., includes chart for substitutions and disposal for household hazardous waste. (206) 676-6724 or 384-1565.

Hazardous Waste in My Home? Tacoma-Pierce County Health Department, Environmental Health Division, Tacoma, WA. Seven-page brochure listing products and non-toxic alternatives.

Household Hazardous Waste Public Education and Information Materials. For Washington State. (January 1988) Washington Dept. of Ecology, Hazardous Substance Information Office (1-800-633-7585)

Guidelines for Conducting Household Hazardous Waste Collection Projects Draft. (May 1988) Hazardous Substance Information Office, Washington Dept. of Ecology, Mail Stop PV-11, Olympia, WA 98504

"Head 'Em Up...Move 'Em Out!" Evaluation of Seattle/King Co. Household Hazardous Waste Round-Up, May, 1987, by Richard Conlin, Metrocenter YMCA, 909 Fourth Ave., Seattle, WA 98104. (206) 382-5013.

Household Hazardous Waste Disposal Project - Summary Report. By David V. Galvin and Susan M. Ridgley. METRO, Municipality of Metropolitan Seattle, Exchange Building, Metro Mailstop 81, 821 Second Avenue, Seattle, WA 98104, (206) 447-5875. December 1982 report of Seattle's collection. Reviews legal framework. Examines pesticides, paint products, household cleaners, and automotive products for their content, health effects, and environmental fate.

Public Opinions and Actions, Report C of the Household Hazardous Waste Disposal Project. (August 1982). Metro Toxicant Program #1, David Galvin, Toxicant Planning Section, Municipality of Metropolitan Seattle; Leonard M. Guss and Judith L. Leraas, Leonard Guss Associates, Inc. A study revealing public awareness and attitudes in the Seattle area on hazardous wastes.

Toward Hazardless Waste, A Guide for Safe Use and Disposal of Hazardous Household Products. (September 1985). By Sally Toteff, Water Quality Division, Municipality of Metropolitan Seattle and Cheri Zehner, Environmental Health Specialist, Seattle-King County Department of Public Health. METRO, Metro Mailstop 81, 821 Second Avenue, Seattle, WA 98104, (206) 447-5875. Inexpensive booklet designed to help consumers make decisions about safe use and disposal of household products.

"Planning Guidelines for Local Hazardouse Waste Plans." (July 1987) Hazardous Waste Program, Department of Ecology, State of Washington, Mail Stop PV-11, Olympia, WA 98504-8711 (206) 459-6322.

Household Chemicals: The Hidden Hazards: Brochure prepared by the Department of Ecology, State of Washington.

Directory for Household Hazardous Waste Disposal in Seattle-King Co. (May 1985) Report E of HHWDP, Metro Toxicant Program, Municipality of Metropolitan Seattle, Water Quality Div., 821 Second Ave., Seattle WA 98104.

WASHINGTON D.C.

Hazardous Waste Exchange, No. 5. League of Women Voters Education Fund, 1730 M Street., NW, Washington, D.C. 20035, (202) 429-1965. Six-page brochure on hazardous materials with a section on households. Free.

WISCONSIN

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Technical Research and Development by Garish M. Nair, Research Assistant, Center for Environmental Management, Tufts University, Medford, MA 02155. This speech given at the New York State Forum on Household Hazardous Waste on Municipal Solid Waste, landfill Leachate, incinerated waste, and wastewater. The text is available from the Center for Environmental Management (617)381-3486.

WASTE CHARACTERIZATION

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APPENDIX VIII

List of Attendees

Reproduced from best available copy.

SOURCE: American Public Works Association

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November 2-4, 1988 Boston MA

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Permanent HHW Collection Programs

PERMANENT HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS OPERATING IN 1988

ALASKA

1. Anchorage, Alaska

Contact: Jim Sweeney, Program Manager, Municipality of Anchorage, P.O. Box 19650, Anchorage, AL, 99519-6650, (907)561-1906.
General Information: Accepts HHW and Small Quantity Generator (SQG) waste at drop-off station or by appointment pick-up; built by municipality at a cost of $1.3 million.
Collection Site: Anchorage Regional Landfill with a drop-off station at the Central Transfer Station.
Date Established: February 1988.

CALIFORNIA

2. Monterey, California

Contact: Ms. Dulce Ledo, Monterey Regional Waste Management District, P.O. Box 609, Marina, CA 93933, (415-468-4114).
General Information: Open 5 days/week for HHW drop-offs; operated by Monterey Regional Waste Management District at an annual cost of $35,000; funded by tipping fees charged to landfill site users.
Collection Site: Monterey landfill.
Date Established: January 1987.

3. San Bernardino, California

Contact: Diane Christensen, Environmental Specialist, San Bernardino County Health Department, 385 North Arrowhead Avenue, San Bernardino, CA 92415, (714)387-4626.
General Information: First of six permanent sites in the county generally accepting only HHW; licensed treatment, storage and disposal facility (TSDF) for the waste collected at this site and at the five satellite sites; open five weekdays per week with no appointment necessary; funded by landfill tipping fee.
Collection Site: San Bernardino TSDF.
Date Established: Spring 1985.

Source: Dana Duxbury & Associates
February 1989

4. Fontana, California

Contact: Diane Christensen, Environmental Specialist, San Bernardino County Health Department, 385 North Arrowhead Avenue, San Bernardino, CA 92415, (714)387-4626.
General Information: One of five county satellite collection sites to the primary site in San Bernardino; open one weekend day/week; co-sponsored by fire department.
Collection Site: Fontana Fire Department.
Date Established: Spring 1985.

5. Redland, California

Contact: Diane Christensen, Environmental Specialist, San Bernardino County Health Department, 385 North Arrowhead Avenue, San Bernardino, CA 92415, (714)387-4626.
General Information: One of five county satellite collection sites to the primary site in San Bernardino; open one weekend day/week; co-sponsored by fire department.
Collection Site: Redland City Yard.
Date Established: Spring/Summer 1987.

6. Barstow, California

Contact: Diane Christensen, Environmental Specialist, San Bernardino County Health Department, 385 North Arrowhead Avenue, San Bernardino, CA 92415, (714)387-4626.
General Information: One of five county satellite collection sites to the primary site in San Bernardino; open one weekend day/week; co-sponsored by fire department.
Collection Site: Barstow Fire Department.
Date Established: Spring/Summer 1987.

7. Rancho Cucamonga, California

Contact: Diane Christensen, Environmental Specialist, San Bernardino County Health Department, 385 North Arrowhead Avenue, San Bernardino, CA 92415, (714)387-4626.
General Information: One of five county satellite collection sites to the primary site in San Bernardino; open one weekend day/week; co-sponsored by fire department.
Collection Site: Rancho Cucamonga Fire Department.
Date Established: Spring/Summer 1987.

8. Victorville, California

Contact: Diane Christensen, Environmental Specialist, San Bernardino County Health Department, 385 North Arrowhead Avenue, San Bernardino, CA 92415, (714)387-4626.
General Information: One of five county satellite collection sites to the primary site in San Bernardino; open one weekend day/week; co-sponsored by fire department.
Collection Site: Victorville Fire Department.
Date Established: Spring/Summer 1987.

9. San Francisco, California

Contact: Larry Sweetser, Environmental Compliance Program Manager, Sanitary Fill Company, 501 Tunnel Avenue, San Francisco, CA 94134, (415)468-2442.
General Information: Licensed treatment storage and disposal facility operated by Sanitary Fill Co. in cooperation with the San Francisco Health Commission and Chief Administrative Office; open 3 days per week for HHW only; funded by solid waste tax on residents' monthly bill.
Collection site: Household Hazardous Waste Collection Facility (HHWCF) at San Francisco Solid Waste Transfer Station.
Date Established: January 21, 1988.

10. Santa Monica, California

Contact: Deborah Baine, Recycling Division, City of Santa Monica, 1685 Main Street, Santa Monica, California, 90401, (213)458-8526.
General Information: Operates Monday - Saturday from 8:00 AM to noon; accepts only HHW; funded through city's general fund for the first year.
Collection site: City Department of Public Works maintenance yard.
Date Established: November 14, 1988.

FLORIDA

11. Volusia, Florida

Contact: Lindalee Anderson, Environmental Specialist, Volusia Environmental Management Department, 123 W. Indiana Avenue, DeLand, Florida, (904)736-5927.
General Information: Collect HHW and conditionally exempt SQG waste on different days, once per month, by appointment for the conditionally exempt SQGs. May start a pick-up waste collection for the conditionally exempt SQGs.
Collection Site: County landfill in Daytona Beach
Date Established: August 1988.

MASSACHUSETTS

12. Martha's Vineyard, Massachusetts

Contact: Kate Gage, Program Coordinator/Planner, Martha's Vineyard Refuse Disposal District, P.O. Box 2248, Oak Bluffs, MA 02887, (508) 693-3479.
General Information: Fixed site managed by the Refuse District and North East Solvents; funded by the District and by a state grant; currently accepts only household waste, though is expected to expand to also accept waste from regulated very small quantity hazardous waste generators (VSQGs); open one or two days per month.
Collection Site: Trailer on the grounds of the Town Wastewater Treatment Plant.
Date Established: August 27, 1988.

MICHIGAN

13. Kalamazoo County, Michigan

Contact: Tom Dewhirst, Kalamazoo County Human Services, Household Hazardous Waste Coordinator, 418 West Kalamazoo Avenue, Kalamazoo, MI 49007, (616)383-8863.
General Information: Accepts only HHW by appointment once per month; funded by County and business contributions; discourages smoke detectors, latex paint, motor oil and car batteries.
Collection Site: Usually at the Kalamazoo County Fairgrounds.
Date Established: July 29, 1988.

14. Washenaw County, Michigan

Contact: Steve Manville, HHW Program Coordinator, County Health Department, 2355 West Stadium, P.O. Box 8645, Ann Arbor, MI 48107, (313)994-2495.
General Information: Accepts only HHW by appointment at mobile sites; discourages smoke detectors, latex paint, motor oil and car batteries; receives approximately 40 participants at a cost of about $2600 per collection.
Collection Site: Health Department parking lot.
Date Established: May 1988.

15. Kent County, Michigan

Contact: Donna Engstrom, Kent County DPW, 1500 Scribner North West, Grand Rapids, MI 49504, (616)774-6892.
General Information: Accepts only HHW by appointment; discourages smoke detectors, latex paint, motor oil and car batteries; funded by the Department of Public Works and managed jointly with Health Department; operating once per month and attracting approximately 50 participants per month.
Collection Site: Garage of DPW Road Commission Building.
Date Established: April 28, 1988.

16. Ingham County, Michigan
Contact: Bob Ceru, Supervisor, Toxic Materials & Hazardous Waste, Ingham County Health Department, P.O. Box 30161, Lansing, MI 48909, (517)887-6988.
General Information: Accepts only HHW by appointment; funded by an EPA grant and the county; recycles paints and automotive products on site; discourages smoke detectors, latex paint, motor oil and car batteries; operating from a fixed site at a cost of approximately $45 per household.
Collection Site: Health Department Garage.
Date Established: September 1986.

17. Macomb County, Michigan

Contact: Robert MacDonald, Program Development, Environmental Health Planner, Macomb County Health Department, 43525 Elizabeth Rd, Mt. Clemens, MI 48043, (313)469-5236.
General Information: Accepts HHW 5 days/week by appointment at no charge; funded by the EPA and the state Natural Resource Department.
Collection Site: Elizabeth Road Storage Site.
Date Established: February 5, 1988.

MINNESOTA

18. Lyon County, Minnesota

Contact: Ned Brooks, Pollution Control Specialist, MPCA - Hazardous Waste Division, 520 Lafayette Road, North St. Paul, MN 55155, (612)296-6300.
General Information: Accepts only HHW, 1/2 day per week; no appointment necessary; paint exchange at collection site; latex paint discouraged; state trains local residents to staff the collection; funded by county with matching state grant.
Collection site: Highway Department Garage in Marshall, MN.
Date Established: November 1988.

19. Duluth, Minnesota

Contact: Ned Brooks, Pollution Control Specialist, MPCA - Hazardous Waste Division, 520 Lafayette Road, North St. Paul, MN 55155, (612)296-6300.
General Information: Accepts only HHW without appointments; paint exchange at collection site; latex paint discouraged; state trains local residents to staff the collection; funded by county with matching state grant.
Collection site: Duluth landfill transfer station/sewage plant/incinerator site.
Date Established: May 1987.

20. Kandyiohi County, Minnesota

Contact: Ned Brooks, Pollution Control Specialist, MPCA - Hazardous Waste Division, 520 Lafayette Road, North St. Paul, MN 55155, (612)296-6300.
General Information: Accepts only HHW, 5 days per week; no appointment necessary; paint exchange at collection site; latex paint discouraged; state trains local residents to staff the collection; funded by county with matching state grant.
Collection site: Landfill storage building in New London, MN.
Date Established: June 1988.

NEW YORK

21. Southold, New York

Contact: Jim McMahon, Southold Town Hall, Main Road, Southold, NY 11971, (516)765-1892.

General Information: Accepts HHW as well as hazardous waste from small businesses, schools, etc. at no charge with no appointment necessary; fixed site built with state funding at $23,000 start-up cost and managed by town with town funds.
Collection Site: Southold landfill.
Date Established: June 1988.

VIRGINIA

22. Arlington, Virginia

Contact: Tanya Spano, Process Control Engineer, WPC Plant, 3401 S. Glebe Rd., Arlington, Virginia, (703)684-6607.
General Information: Accepts only HHW; operated by the Water Pollution Control Plant for Arlington; funded by county; drop-off by appointment.
Collection Site: Water Pollution Control Plant.
Date Established: 1986.

WASHINGTON

23. Whatcomb County, WA

Contact: Dave Bader, Whatcomb County Health Department, P.O. Box 935, Bellingham, WA 98227, (206)676-6724.
General Information: Accepts HHW by appointment during regular working hours; program is run by County Health and Solid Waste Departments and funded by solid waste budget.
Collection Site: Waste collected at shed at city central shops.
Date Established: 1982.

24. Thurston County, Washington

Contact: Marie Zurofke, County Health Department, 2000 Lakeridge Drive, Olympia, WA 98502, (206)786-5459.
General Information: Accepts only HHW; funded by County Public Works and Environmental Health Departments from a solid waste tipping fee; start-up costs, including the construction of a small building, was approximately $20,000; accept waste without appointment every Saturday; currently do not advertise the collection service because facility would be overwhelmed, but expansion is expected.
Collection Site: Building situated at Thurston County Landfill.
Date Established: March 1987.

25. Georgetown, Washington

Contact: Kathy Buller, Chemical Processors, Inc., 2203 Airport Way, South, Seattle, WA 98134, (206)223-0500
General Information: HHW only accepted as a public service by Chemical Processors at no charge; operating 1 day/week. Accept non-extremely hazardous SQG waste at a fee as of February 1989.
Collection Site: Chem Processors commercial TSD facility in Georgetown (outside of Seattle).
Date Established: 1982.

26. Washougal, Washington

Contact: Kathy Buller, Chemical Processors, Inc., 2203 Airport Way, South, Seattle, WA 98134, (206)223-0500
General Information: HHW only accepted as a public service by Chemical Processors at no charge; operating 1 day/week. Accept non-extremely hazardous SQG waste at a fee as of February 1989.
Collection Site: Chem Processors commercial McClary Columbia TSD facility in Washougal.
Date Established: June 1988.

27. Seattle/King County, Washington

Contact: Wallace Swofford, Environmental Health Supervisor, Seattle/King County Department of Public Health, 172 20th Avenue, Seattle, WA 98122, (206)296-4633.
General Information: Collects pesticides (targets banned pesticides) from households at 5 sites, 5 days per week, by appointment; funded by county and city; County is phasing out program as new permanent sites and mobile facilities are in the planning stages.
Collection Site: 5 sites in the County.
Date Established: 1982.

A permanent collection program is defined as a program that accepts HHW at least once per month.

APPENDIX XIV

Information for Ordering Conference Summaries

INFORMATION FOR ORDERING CONFERENCE SUMMARIES

The Center for Environmental Management (CEM) has copies available of the following:

SUMMARY OF THE 1ST NATIONAL CONFERENCE ON HOUSEHOLD HAZARDOUS WASTE MANAGEMENT, ARLINGTON, VA, 1986.	$ 5.50
SUMMARY OF THE 2ND NATIONAL CONFERENCE ON HOUSEHOLD HAZARDOUS WASTE MANAGEMENT, SAN DIEGO, CA, 1987.	$15.00
SUMMARY OF THE 3RD NATIONAL CONFERENCE ON HOUSEHOLD HAZARDOUS WASTE MANAGEMENT, BOSTON, MA, 1988. (Contact CEM for the price of this publication.)	

Make check payable to:

The Trustees of Tufts College

Mail check to:

Center for Environmental Management
Curtis Hall, Tufts University
474 Boston Avenue, Curtis Hall
Medford, MA 02155
(617) 381-3486

Note: See Appendix XV for information on ordering audio tapes of the 3rd National HHWM Conference.

APPENDIX XV

Information for Ordering Conference Audio Tapes

Information for Ordering Conference
Audio Tapes

American Public Works Association

"Dedicated to the Protection and Enhancement of the Human Environment"

Household Hazardous Waste Management

The Household Hazardous Waste Management Conference sessions are being professionally recorded by Capital Audio Visuals, Inc. under the auspices of the American Public Works Association. Audio cassettes of the live presentations will be produced at the meeting -on the spot- so that you may take them home with you. Casettes are $7.00 each or $135.00 for a complete set. All cassettes are unconditionally guaranteed as to workmanship and materials. Please place your orders at the cassette table as early as possible to avoid delay. Postmeeting orders should be directly through Capital A/V 6911 Richmond Hwy., Suite 225, Alexandria, Virginia 22306. Payment will be accepted in the form of cash or checks only. Receipts will be issued.

WEDNESDAY, NOVEMBER 2,1988

____ 8811-2A Plenary Session - Keynote Address:EPA Perspective on Household Hazardous Wastes (3 Tape Set) Individual set price $21.00

THURSDAY, NOVEMBER 3, 1988

____ 8811-3A How to Run a Collection Program (4 Tape Set) Individual set price $28.00
____ 8811-3B 1988 Special HHWM Programs (1 Tape)
____ 8811-3C Used Oil (1 Tape)
____ 8811-3D Reduction and Other Management Options (1 Tape)
____ 8811-3F Funding (1 Tape)
____ 8811-3G Permanent Programs (1 Tape)
____ 8811-3H Program Management (1 Tape)
____ 8811-3J Pesticides (Farm and Home) (1 Tape)
____ 8811-3K Components of an HHWM Education Program (1 Tape)
____ 8811-3L Scientific Information (1 Tape)
____ 8811-3N Batteries (1 Tape)
____ 8811-3O Paint (1 Tape)
____ 8811-3P Legislative (1 Tape)

FRIDAY, NOVEMBER 4, 1988

____ 8811-4A Plenary Session - Congressional Concerns - Contracts and RFP - Future Trends (2 Tape Set) Individual set price $14.00

** SEE PROGRAM FOR DETAILS ON EACH SESSION**
*** FOR MAIL ORDERS PLEASE ADD $1.00 PER CASSETTE FOR POSTAGE AND HANDLING ***MAX.$5.00

November 2-4, 1988

The Westin Hotel—Copley Place
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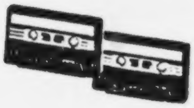

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NOTE: PLEASE COMPLETE THE ORDER FORM ON THE REVERSE SIDE AND MAIL TO THE ADDRESS PROVIDED.

PLEASE ALLOW FOR TWO WEEKS DELIVERY.

APPENDIX XVI

State Level HHW Laws and Regulations:
Definition of Column Headings

* Evaluation Report - Evaluation reports that were prepared to evaluate state-run pilot projects.

Advisory Committee Report - Recommendations and evaluations of HHW activities by state appointed HHW advisory committee.

Retail Sales Permit Fee - Iowa requires retail stores that sell hazardous household products to purchase a permit. Revenue generated by permit fees are used to fund HHW collections.

EPA Clean-up Grant $ - Regional Offices of EPA have provided grant monies that have been used to fund HHW management programs.

State Solid Waste Superfund $ - State solid waste cleanup funds which have been applied to HHW management.

Use of State Superfund $ - State hazardous waste waste cleanup funds which have been applied to HHW management.

State Matching Grants - State grants used for local HHW collections which match the funding commitment of the local sponsors.

State Legislative Appropriation - General revenue appropriations approved by state legislatures to fund HHW management efforts.

Pilot Clean-up Programs - Programs held on a one time basis, often as a precursor to more permanent state commitment of resources and staff time funded with general revenues.

State Run Clean-up Programs - HHW collections that are sponsored, managed and funded by state agencies.

State Education Programs - HHW education programs that are sponsored by state agencies.

Reduction of Liability - Legislation or regulations designed to limit the liability of HHW collection program sponsors and managers.

HHW Product Labeling - State regulations or guidelines that pertain to the labeling of hazardous household products.

Define HHW - Formal state definitions of HHW.

Regulations and/or Guidelines - State regulations or guidelines pertaining to the definition and/or management of HHW.

Study - State-sponsored studies regarding HHW.

Law - State laws, or specific HHW provisions in a comprehensive law, that address HHW.

* Please note that some of these categories may overlap, resulting in double counting of some state programs.